U.S. ARMY BAYLOR PROGRAM

CUSTOMER SATISFACTION DIFFERENCES IN A HEALTH PLAN'S

LINES OF BUSINESS: PREDICTORS OF SATISFACTION USING THE

NATIONAL COMMITTEE FOR QUALITY ASSURANCE (NCQA)

ANNUAL MEMBER SURVEY

A GRADUATE MANAGEMENT PROJECT SUBMITTED TO

MAJOR BERNARD KERR, USAF, MSC IN CANDIDACY FOR THE DEGREE
OF

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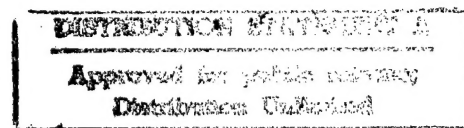BY

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13. ABSTRACT (Maximum 200 words)

THIS PROJECT REPORTS THE RESULTS FROM A CUSTOMER SATISFACTION SURVEY CONDUCTED FOR A CENTRAL TEXAS, START-UP HMO USING THE NCQA'S ANNUAL MEMBER HEALTH CARE SURVEY, VERSION 1.0. THE PRIMARY CRITERION WAS OVERALL CUSTOMER SATISFACTION. THE POTENTIAL PREDICTORS WERE OVER 100 KEY HEALTH CARE VARIABLES INCLUDING: MEASURES OF SATISFACTION WITH HEALTH CARE SERVICES, PLAN ADMINISTRATION, THE MANAGEMENT OF CARE, AND PHYSICIAN COMPETENCIES; HEALTH STATUS INDICATORS; BEHAVIORAL INTENTIONS; LINE-OF-BUSINESS; AND BASIC DEMOGRAPHICS. THE STUDENT'S T-TEST REVEALED STATISTICALLY SIGNIFICANT RESULTS FOR THE LINE-OF-BUSINESS (n=611) PREDICTING OVERALL CUSTOMER SATISFACTION, $t(609) = -2.29$, $p=.022$, AS WELL AS ELEVEN OTHER CRITERIA. THE STEPWISE REGRESSION MODEL FOR HMO OVERALL CUSTOMER SATISFACTION (n=303) YIELDED NINE PREDICTORS RESULTING IN $R^2 = .7355$, $F(9, 293)=90.52$, $p .0000$. LIKEWISE, THE REGRESSION MODEL FOR THE PPO OVERALL CUSTOMER SATISFACTION (n=308) IDENTIFIED FIVE PREDICTORS RESULTING IN $R^2=.6539$, $F(5, 302)=114.14$, $p .0000$. THE RESULTS OF THE PROJECT SUGGEST HEALTH PLAN EXECUTIVES SHOULD REGULARLY ASSESS THEIR ORGANIZATION'S IMPACT ON CUSTOMER SATISFACTION. ADDITIONALLY, THE USE OF A LIMITED NUMBER OF PREDICTIVE VARIABLES TO CONDUCT MORE FREQUENT "PULSE CHECKS" CAN PRODUCE MEANINGFUL CUSTOMER SATISFACTION INFORMATION.

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ABSTRACT

This project reports the results from a customer satisfaction survey conducted for a central Texas, start-up health maintenance organization using the National Committee for Quality Assurance's Annual Member Health Care Survey, Version 1.0. The primary criterion was overall customer satisfaction; however, other criteria were tested in conjunction with a hypothesis that postulated differences between the HMO's two benefit plan options. The potential predictors were over 100 key health care variables including: measures of satisfaction with health care services, plan administration, the management of care, and physician competencies; health status indicators; behavioral intentions; line-of-business; and basic demographics. The Student's t-test and stepwise multiple linear regression analyses were used to investigate hypothesized relationships among the criteria and predictors (n = 611). The Student's t-test revealed statistically significant results for the line-of-business predicting overall customer satisfaction, $t(609) = -2.29$, $p = .022$, as well as eleven other criteria. The stepwise regression model for HMO overall customer satisfaction (n = 303) yielded nine predictors resulting in $\underline{R}^2 = .7355$, $F(9, 293) = 90.52$, $p< .0000$. Likewise, the regression model for the preferred provider organization (PPO) overall customer satisfaction (n = 308) identified five predictors resulting in $\underline{R}^2 = .6539$, $F(5, 302) = 114.14$, $p< .0000$. The results of the project suggest health plan executive leadership and managers should regularly assess their organization's impact on customer satisfaction. Additionally, the use of a limited number of predictive variables to conduct more frequent "pulse checks" can produce meaningful customer satisfaction information that can be used for a variety of organizational purposes.

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GLOSSARY

Central Limit Theorem. The theorem in mathematical statistics that the sampling distribution of the mean approaches a normal curve as N gets larger.

Customer Satisfaction. Generically refers to the measurement of one or more of a variety of customer opinions including ratings of service quality, future behavioral intentions, patient self-assessment of outcome, and satisfaction.

Exciting Quality Attribute. Quality attributes which are very welcome but not thought to be necessary before experienced.

Expected Quality Attribute. Quality attributes which are necessary and expected.

Evidence of Coverage. A description of a health maintenance organization's or managed care organization's benefits, exclusions and copayment/coinsurance fee structure.

Line of Business. A set of products and/or services that are related to each other by such factors as the target customer, the mechanisms through which they are marketed and financed, the level of risk accepted and/or even their price range (e.g., health maintenance organization, preferred provider organization, Medicare-risk contract, Medicaid-risk contract)

Managed Care Organization. An organization that offers one or more products that integrate financing and management with delivery of health services to an enrolled population; are responsible for delivering services (using their health service organizations or through contractual arrangements) and (as a network or as individual providers) either share financial risk and/or have some incentive to deliver efficient services; and use an information system capable of monitoring and evaluating patterns of utilization and financial outlays.

Mixed-Model Health Maintenance Organization. A health maintenance organization that uses one or more provider network types to deliver health care services to an enrolled population.

National Committee for Quality Assurance (NCQA). A nonprofit organization committed to the development of health care quality standards and the accreditation of managed care organizations based on these standards.

Rating Scale Anchor. The two most extreme points on an evaluation scale (e.g., on a five-point Likert scale one [1] and five [5] would be the anchors).

Report Card. A published summary of health plan performance which generally includes measures of .

Self-funded. A method of health care financing in which the employer group accepts and underwrites its own risk and is primarily responsible for funding the claims payment.

"Take It For Granted" Quality Attribute. Quality attributes which a hospital must posses to be acceptable.

CHAPTER ONE

INTRODUCTION

While other service industries have been measuring and leveraging customer satisfaction for years, managed care organizations (MCOs) are relatively new participants in using customer satisfaction measures for other than traditional quality assurance programs. However, this paradigm is rapidly changing as the delivery and financing of care have become more integrated, and MCOs have become the primary organizations for arranging and/or providing care across the health care continuum. As the health care market continues its march toward the further integration of financing and delivery (i.e., capitation and full-risk products), MCOs must be able to meet and exceed the demands of numerous customers and suppliers in the health care value chain. Now recognized as an important and viable outcome measure, the ability to measure customer satisfaction and use it for strategic planning and marketing purposes are rapidly becoming the norm for MCOs striving to improve their services and market share. This graduate management project will examine the concept of customer satisfaction in detail and report on one health maintenance organization's experience using a standardized customer satisfaction survey in two distinct lines of business.

Problem Question

Quality improvement programs include structure, process and outcome measures. Of the three, outcomes are considered critical to the future of MCOs, particularly those that seek accreditation. A MCO's ability to measure, report and use one crucial category of outcome measures, *customer satisfaction measures*, will play an essential role in building customer loyalty and market share. What are the key predictors that MCOs must influence to substantially affect customer satisfaction among their different lines of business?

Conditions Which Prompted the Study

The Daughters of Charity National Health Services (DCNHS) is a chain of 40 hospitals nationwide that offers inpatient, outpatient, and ancillary services to its clients. The Daughters of Charity Health Services of Austin (DCHSA), the Austin market's subsidiary of the DCNHS, is currently doing business as the SETON network. The SETON network has been a leader of managed care for both the DCNHS and the Austin area through their introduction of numerous MCOs such as a physician hospital organization (Seton Physician Hospital Network), a risk-assuming capitated physician group (Advantage HealthCo), and a physician management services organization (Advantage Management Services Organization). In September of 1995, the SETON network added a new MCO when they ventured into Austin's health maintenance organization (HMO) market with the introduction of the Seton Health Plan (SHP), Incorporated. Figure 1 depicts the organizational relationships between the SETON network and its subsidiaries.

FIGURE 1

SETON NETWORK MANAGED CARE SUBSIDIARIES

```
                    ┌─────────────────────────┐
                    │      SETON NETWORK      │
                    │   Austin Subsidiary of the│
                    │          DCNHS          │
                    └─────────────────────────┘
 Corporate Member                                    Sole Shareholder
        ┌──────────────────────────────┐  ┌──────────────────────────┐
        │ SETON PHYSICIAN HOSPITAL NETWORK│  │   SETON HEALTH PLAN      │
        │  Physician Hospital Organization│  │   Texas-licensed HMO     │
        └──────────────────────────────┘  └──────────────────────────┘
  Corporate Member              Sole Shareholder
     ┌──────────────────┐  ┌──────────────────────┐
     │ADVANTAGE HEALTHCO │  │    ADVANTAGE MSO     │
     │       IPA         │  │Physician/Group Management│
     │   Risk-Assuming   │  │  & Consulting Services│
     └──────────────────┘  └──────────────────────┘
```
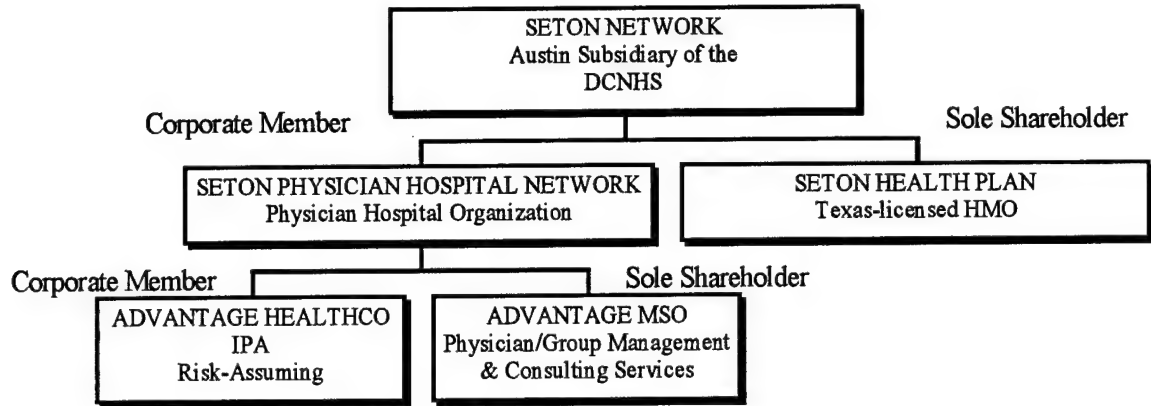
Seton Health Plan Factors

The Seton Health Plan is a start-up, for-profit HMO incorporated under Texas

Insurance Code 20A, Texas Health Maintenance Organization Regulations. Because

current medical practice laws in Texas forbid HMOs from directly employing physicians,

the SHP is using independent practice associations (IPA), group and network providers

for health care services; therefore, SHP is a mixed-model HMO. Furthermore, SHP is a

hospital-based HMO since their capital partner in the venture is the SETON network. As

required by the Texas Department of Insurance (DOI), the SHP filed an Evidence of

Coverage (EOC) and Schedule of Benefits which describes the SHP benefit design for

their fully-insured commercial HMO product. Presently, the SHP has not sold a

commercial account and has not enrolled any fully-insured lives under their state filing.

Instead, SHP is currently servicing two self-funded accounts encompassing almost 11,000

members. One of the accounts is the city-organized health care welfare program (Medical

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Assistance Program). Members of this account were excluded from the study because of the limited involvement the SHP has in providing network or administrative services. The other account is the approximately 5,500 SETON network employees and their eligible dependents. For this self-funded account, the SHP provides network and administrative services for an HMO and PPO option. These two options and their associated benefit designs have only been in existence since July 1, 1995. Prior to that time, SETON offered their employees two PPO options: high plan and low plan.

During the initial stages of strategic planning, SETON network leadership and the SHP's Board of Directors determined that the new HMO needed to measure customer satisfaction to satisfy market demands and organizational goals (see Table 1). Without customer satisfaction information, the leadership of both organizations believed it would be difficult to secure commercial accounts, to be accredited by the National Committee for Quality Assurance (NCQA) and to meet consumer demand for HMOs to provide quality information regarding their services. Additionally, SETON network leadership expected the SHP to meet corporate guidelines requiring all subsidiaries to measure and report customer satisfaction with their products and services. Furthermore, by undertaking the study, the HMO would be able to establish customer satisfaction as an organizational precedent and ongoing concern for the organization. Lastly, the study would provide SETON leadership with the unique opportunity to survey its own employees satisfaction with their health care services and to potentially use the results to improve employee morale. As a result, Board members resolved that within one year of operations, the HMO would have a survey instrument selected, a baseline study conducted and the

methods and procedures institutionalized. Additionally, the members clearly articulated their belief the information would provide a future competitive advantage when SHP sought accreditation, entered new markets, and started other lines of business.

TABLE 1

SETON HEALTH PLAN FACTORS	
Organization	Factor
Austin Market	Employer group and customer expectations
SETON	Considered an important network-wide quality indicator Network leadership expects subsidiaries to measure customer satisfaction Opportunity to measure their own employees' satisfaction with health services
SHP	Required for accreditation purposes Establish customer satisfaction as an organizational precedent System used must measure satisfaction across multiple lines of business

Military Health Service System Factors

The Department of Defense (DoD) is currently in the process of regionalizing the Military Health Service System (MHSS) into twelve distinct regions of care. This effort, known as TRICARE, is based upon the seamless integration of two delivery systems which were previously separated: Military Treatment Facilities (MTFs) and the Civilian Healthcare and Medical Programs for the Uniformed Services (CHAMPUS). Under the

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new system, eligible DoD beneficiaries will be able to choose from one of three benefit designs for their health care delivery: (1) HMO with Point-Of-Service (POS), (2) Preferred Provider Organization (PPO), or (3) standard indemnity. Where possible, MTFs will be the site of choice for delivering health care to enrolled HMO members. For out-of-MTF needs and PPO and standard indemnity purposes, each region has bid the remainder of the health care delivery to a managed care support (MCS) contractor for each of the twelve regions. DoD executive oversight of these contracts is handled by a "Lead Agent" office in each region. In this new environment, the Lead Agent's ability to measure customer satisfaction both in and outside the MTFs will be extremely important to assessing the effectiveness of each TRICARE MCS contract. The information can also be used in regional quality improvement (QI) programs. Furthermore, civilian contractors will need to implement and measure customer satisfaction to earn re-award of their contracts. The availability of a tested survey instrument and process may provide a valuable tool to the regional contractors and the MHSS. Table 2 provides a summary of the MHSS factors that prompted the selection of this topic for the study.

TABLE 2

MILITARY HEALTH SERVICE SYSTEM FACTORS	
Organization	Factor
MHSS	Method of assessment for MCS contracts' effectiveness
Lead Agents	Results of survey used as customer satisfaction template system
MCS	Study used as benchmark

Limitations

Studies of this nature are not without their limitations, especially since the SHP is a start-up company focused on establishing its business practices and penetrating its target markets (see Table 3). Of these limitations, the use a self-funded population has the greatest impact on SHP's capacity to apply the results for commercial purposes because of a lack of similar benefit designs and plan administration issues. The benefit design agreed upon by SETON network does not match the EOC filed with the state; therefore, the variables measuring satisfaction with benefit design will not apply to commercial populations. Additionally, in the self-funded environment, certain components of plan administration, such as member services, claims administration and customer education materials, are not being administered by the SHP. Instead, SETON network Human Resources (HR) and outsourced contractors are performing these functions. Since the study is retrospective, variables measuring customer satisfaction with plan administration will not be measuring SHP's performance, but will be measuring customer satisfaction with SETON HR and outsourced contractors. Another limitation with the study is related to the limited time the new benefit design has existed. The NCQA protocol stipulates that enrollees have at least 12 months of continuous enrollment in the health plan allowing for multiple breaks so long as no one break exceeds 45 days or more. Study participants have had only seven months of continuous enrollment, which may impact the actual number of respondents that have had the opportunity to use the plan benefits. In addition to these concerns, the NCQA will not recognize this study as part of their survey process until it is carried out by a third party research company and survey protocol is duplicated exactly as

outlined in the manual. As a result of these factors, the generalizability of the study will be limited to the study population and other similar populations.

TABLE 3

STUDY LIMITATIONS	
Organization	Factor
NCQA	Lack of formal recognition by NCQA
SETON	SETON network's health care programs are self-funded
SHP	Organizational competition for future resource support

Literature Review

The current focus on customer satisfaction measures as outcome measures is rooted in historical quality assurance and assessment programs. Understanding the historical and chronological evolution of quality measures clearly sets the precedent that outcome measures, particularly those that relate to customer satisfaction, will be the predominant quality measures of the future. To establish a framework for the study and its resultant conceptual theory, the body of literature related to the quality paradigm; the chronological development of outcome measures; the establishment of customer satisfaction measures and standardized surveys; and the methodological issues and utility for the findings must be examined.

The Quality Paradigm

Outcome measures have traditionally been part of the triad of quality assessment: *structure, process and outcome*. This triad has been the foundation for examining all

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aspects of care rendered in health care facilities and organizations (Lohr 1988, 37).

Structure measures focus on the setting and environmental issues that facilitate the

delivery of care. For example, a facility's licensure, compliance with safety codes and

number of board certified physicians are structure measures. *Process* measures focus on

the manner in which care is provided and include such measures as the patient's

involvement in acquiring care and the physician-patient interaction (Williams and Torrens

1993, 388-9). *Outcome* measures focus on the health status achieved as a result of

medical intervention. Mortality rates and postsurgical morbidity rates are examples of

outcome measures. Structure, process and outcome measures are intimately woven

together, whereas outcome measures are built upon process measures, and process

measures are built upon structure measures. As such, the three dimensions are

interdependent, and all need to be measured to portray an accurate picture of the quality

of medical care being delivered in health care organizations.

The Conceptual Theory of Outcome Measures

As previously mentioned, outcome measures fall into the "Outcome" category of

the quality assessment triad. The outcome category has been defined by numerous authors

in the health care literature. Avedis Donabedian, one of the undisputed leaders in health

care quality theory and implementation, offers the following definition:

> . . . the effects of care on the health status of patients and populations.
> Improvements in the patient's knowledge and salutary changes in the patient's
> behavior are included under the broad definition of health status, and so is the
> degree of the patient's satisfaction with care (Donabedian 1988, 1745).

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Another proponent of outcomes research, Dr. Paul Ellwood (Hale and Weiner 1994, 34), also believes the definition of outcome includes, "tracking patients with a single condition over a period of time and reaching conclusions about the impact medical care is going to have on them." Although both definitions are abstract, they focus attention on the fact that outcomes involve individuals and populations, improvement in behavior and knowledge and most importantly patient (or customer) satisfaction.

The design of meaningful outcome measures is complex and exacting work because it requires one to look across the continuum of care and carefully analyze all the different factors that may influence an individual's or population's health status or satisfaction. The dimension of health (physiological, physical or emotional), timing of care and an established relationship to a process of care are all characteristics of outcome measures (Lohr 1988, 38). Additionally, Donebedian believes that these characteristics of outcomes must be modified by adjustments for case-mix, age and other confounding factors to better standardize outcomes information between delivery settings and patient environments (Donabedian 1992, 359). These characteristics shape the development of each outcome measure and provide the basis for being able to measure an improvement in health status or satisfaction.

Once an outcome can be described, it can be measured. When determining how to measure an outcome, researchers and clinicians need to define the purpose of the measurement and identify the source of information, the data collection methodology and the agent responsible for analysis and interpretation of the data. Furthermore, the measurements chosen to represent an outcome must have the properties of reliability and

validity present to make them meaningful and generalizable across a given population (Lohr 1988, 37).

The Development of Outcome Measures

<u>The Chronological Origins of Outcome Measures</u>

1.) The Age of Development

The development of outcome measures is not a new science. As early as 1916 the rudiments of outcome measures had been established by Ernest Amory Codman (Donabedian 1985, 244) in studies he termed "end results." Codman accurately ascertained that an individual's or population's health status was the product of clinical, organizational, administrative and economic factors which could be measured and tested for their appropriateness. Using Codman's revolutionary work, others began examining the relationship between health outcomes, and health status and health care delivery. In 1933, Hooker began using preventable maternal mortality as a measure of quality at the New York Academy of Medicine. In 1955, Kohl, also at the New York Academy of Medicine, sponsored an outcome study on improving the rate of preventable perinatal deaths. During the late 1950's and early 1960's, the use of mortality rates grew in popularity due to the work of researchers such as Shapiro et al. of the Health Insurance Plan of Greater New York, and Lipworth et al. in Britain. These researchers outlined the use of mortality rates as outcome measures of quality. By 1964, the fundamentals of measuring outcomes and their use as quality indicators were firmly established (Donabedian 1985, 245).

2.) The Age of Refinement

Beginning in the late 1960's, health care researchers and providers began refining outcome measures by narrowing the use of outcomes to two separate categories (Donabedian 1985, 254-5). Researchers classified the first category of outcome measures as a *judgment of quality* in and of themselves, and the second as, outcome measures that were a *"trigger to the assessment of antecedent process."* Researchers examining the use of outcomes as *a judgment of quality* quickly realized that adjustments were necessary to account for a multitude of confounding factors that would hinder the generalizability of outcome measures. Studies conducted by Roemer et al. led to adjustments for length of stay and hospital occupancy. In 1969, Bunker et al. conducted further studies in outcome adjustments in the National Halothane study in which they introduced the concept of case-mix adjustment. Researchers at the Staff of the Stanford Center for Health Care Research proposed the most radical set of outcome refinements in 1976 when they outlined risk adjustments between institutions based on postsurgical fatalities (Donabedian 1985, 255). The age of using outcome measures as judgment criteria for quality had dawned.

In contrast, studies conducted throughout the 1970's by John Williamson of Johns Hopkins University focused more on outcome measures as *"triggers to antecedent health care."* In such a capacity, adverse outcomes were simply an identifier that an underlying problem may exist with the care being rendered to an individual. Moreover, these studies provided the foundation for the development of practice guidelines, the recognition that other measures besides morbidity and mortality data could be used for outcomes, and the recognition that standardized functional scales were also important to outcome measures.

Working from this premise, and using the Williamson studies as a foundation, Mushline

and Appel of John Hopkins University developed one of the first health status indices

known as the "Problem Status Index" (Donabedian 1985, 257). The use of health status

indices furthered the field of outcome measures by recognizing that, not only were clinical

and functional status important measures, but the *patient's perception of his or her well-*

being also contributed to the improvement of health status and could be measured (Lohr

1988, 38). These original studies shaped the development of today's most common health

outcome measures, "the five D's:" death, disease, disability, discomfort and

dissatisfaction.

3.) The Age of Criticality

Until more meaningful measures are developed, the "five D's" are still the most

commonly used outcome measures for assessing an individual's or population's health

status and/or the value of care received. As an example, when the Health Care Financing

Administration (HCFA) decided to release hospital-specific mortality rates as a basis for

comparison, the hospital sector vocally opposed the decision (Bergman 1994, 36). Health

care providers and organizations have also raised concerns with the disease, disability and

discomfort measures. First and foremost, providers are concerned with the almost

exclusive use of physiologic variables as the outcome measures for disease. Although

many measures are both reliable and valid, they often require practitioners to glean large

amounts of information from the patient directly and to subject the patient to invasive

testing. Furthermore, if the patient's medical condition resolves, and she does not return

for follow-up care, the health care provider and/or organization may never adequately

capture the positive impact treatment had on her. Health care providers and organizations are equally concerned with the disability outcome measures. Current measures such as days of disability are valuable in the fact that they measure the progress of health care delivery as a whole, but may fail to reflect the quality of care rendered to an individual. A prime example is when a provider recommends a given number of days in bed as an appropriate therapy for a given condition. If the outcome being measured for that condition is disability days, the health care organization and its providers might inadvertently demonstrate an unfavorable outcome, when in fact, appropriate protocols and standards of care are being followed. Present discomfort outcome measures also present some unique problems which health care organizations and providers must overcome to improve the delivery of health care. Of all measures, providers place the least emphasis on quantifying discomfort over time because it is difficult to accomplish and usually requires the use of a health status questionnaire. This is not to say that providers and health care organizations are ignoring the needs of those in discomfort. Instead, they realize the difficulty of gathering data from self-reported health status questionnaires (Lohr 1988, 39).

These concerns are further exacerbated by the *data collection process* and *lag time* for receiving data. At present, most outcome studies are retrospective and use administrative claims data. These data usually lag 12 to 18 months behind the actual service date and may be coded incorrectly by the provider or coding specialist. As such, the lack of real time data for intervention purposes is somewhat limited. This, however, does not mean retrospective data is without value. On the contrary, retrospective data is

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valuable in assessing long term performance and should be used to address changes in the total health care delivery system (Leatherman et al. 1991, 351). These concerns have been addressed by current research that is mainly geared toward the development of outcome measures as effective and efficient indicators of the value of the health care service delivered (Lohr 1988, 39-43). The landmark health outcomes studies discussed in detail later have attempted to assess and establish the reliability and validity of using outcome measures (including customer satisfaction) as determinants of health care quality and value, and to set a framework for outcome measures in the future.

4.) The Age to Come

Regardless of the promising results of current outcomes research, MCOs face three challenges in the future which require further investigation: (1) demonstrating the *linkage* between process and outcome, (2) establishing criteria that are more *flexible and adaptable* to the clinical peculiarities of each case, and (3) making advances in *health status assessment tools* (Donabedian 1988, 1748 and Lohr 1988, 44-7). If the users of outcome data cannot clearly link the processes of the care delivered to favorable outcomes, it will be highly unlikely that outcome measures will expand beyond their current applications. If, however, strong linkages can be established, outcome measures will provide substantial and pertinent data on how to improve the quality and value of the care delivered.

A corollary to improving the linkage between process and outcome will be creating criteria and standards that are more *flexible and adaptable*. The new criteria will need to focus on the continuum of care and enable MCOs to predict outcomes for a given

condition and population (Donabedian 1988, 1748). Additionally, the criteria will need to be flexible enough to cover the spectrum of delivery systems and sites of care.

Lastly, the users of outcome measures in the future will need to make advances in developing *health status assessment tools*. Individuals and organizations, including MCOs, will need to improve and expand the current pool of health status indices because they are currently centered on adults and the nonelderly. MCOs will also need to establish incentives for clinicians to use these tools in their practices as a method of assessing the impact a clinician's practice has on health and functional status (Lohr 1988, 46-7). Ultimately, developers of outcome measures will be tasked to strengthen the correlation between the health status assessment's outcome measure and their commensurate physiologic interventions thereby making nonintrusive data more accurate (Lohr 1988, 46).

Landmark Outcome Studies

The work done by the early pioneers such as Codman, Roemer and Bunker, established the foundations for using outcomes as a measure of health quality; however, more recent studies have focused on improving the measures themselves. The primary contribution of these studies has been to establish the reliability and validity of using outcome measures as determinants of health care quality and value. Within the battery of outcome measures used in each study, measures specifically related to customer satisfaction were also established as reliable and valid. As a result, the customer satisfaction measures used in these surveys firmly incorporated the practice of using customer satisfaction measures for assessing health care quality and value.

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1.) RAND Health Insurance Experiment (HIE)

One of the original studies substantiating health outcomes as reliable and valid

indicators of quality is the RAND HIE. This study (Wagner and Bledsoe 1990, 191) is

particularly important to MCOs as it represents, ". . . the most persuasive evidence to date

regarding the consequences of various health insurance plans on health care costs,

utilization, client satisfaction and health status." Conducted between November 1974 and

January 1982, the HIE was a large-scale controlled trial that sampled 2,800 families

(7,700 persons) located in six areas of the United States, who were randomly assigned to

several different health insurance plans. The plans ranged from an HMO option to fee-for-

service (FFS) options with coinsurances ranging from 0 to 95 percent. The Group Health

Cooperative of Puget Sound (GHC), a staff model HMO, was the only participating

MCO, although it could be argued that some FFS options largely mimic the preferred

provider organizations (PPO) and point-of-service (POS) plans widely available today.

Researchers collected data from a variety of sources including: a detailed annual

questionnaire, physical examinations, and health status questionnaires. The *health status*

measures alone included over 26 indicators for physical health, mental health, role

functioning, social functioning, health perceptions, lifestyle and serious symptoms.

Outcome measures regarding customer satisfaction were also collected. These measures

(health status, outcomes based on satisfaction, other health outcome measures and a

variety of clinical and laboratory findings) were then used in a nationwide study to assess

the improvements or the degradation of the health status of the individuals assigned to

each type of health insurance plan. From the data collected, many different researchers conducted a variety of analyses.

One of the most compelling analyses was done by Ware et al. (1987). Using *13 of the 26 health status measures* and a battery of other health outcome measures, Ware et al. discussed three major points: (1) medical expenditures at GHC were 25 percent less than the two FFS plans participating in the study, (2) HMO care was associated with lower overall general client satisfaction, and (3) significant health status differences existed between high and low income individuals who started the study with existing health problems. From his findings, Ware and his team concluded that HMO care for the economically sound could produce cost savings without sacrifices to a member's health status. However, the researchers also concluded that sicker and poorer HMO members may be adversely affected health status compared to their FFS counterparts.

Another analysis of the RAND HIE data was conducted by Sloss et al. (1987, 130-6). In this study, Sloss compared the results of HMO and FFS members for *all 26 of the health status measures* and additional measures from clinical and laboratory findings. Their findings clearly contradicted those of the Ware et al. study. Sloss's group found that no differences in the 26 health status indicators existed between HMO and FFS plan members. Additionally, the Sloss team found no significant differences between high and low income members of the HMO group for any of the other outcome measures.

Concerned with the findings and conclusions the Ware group had suggested, Dr. Edward Wagner, one of the GHC's practicing physicians, provided commentary in The Journal of the American Medical Association. Although he agreed with the utilization,

cost and satisfaction findings of both studies, he did not agree with the conclusions

reached for low-income, sicker HMO members. Wagner argued that for the *health status*

measures analyzed in both the Ware and Sloss studies, only two reached statistical

significance and they were characterized by small sample sizes, large baseline differences

and large standard deviations (Wagner and Bledsoe 1990, 200).

Although the RAND HIE reports and subsequent analyses provided insightful and

provocative theories about the differences in health status and patient satisfaction between

HMO and FFS participants, an even greater contribution was made to the field of outcome

measures. The greatest contribution the RAND HIE study made was that a variety of

clinical and self-reported health outcomes were used to readily assess changes in health

status over time (Wagner and Bledsoe 1990, 200). As such, the RAND HIE "opened the

door" for the use of outcome measures, including client satisfaction, as viable measures of

quality and value.

2.) Medical Outcomes Study

The Medical Outcomes Study (MOS) was an observational study conducted to

serve two purposes:

> (1) compare the variations in patient outcomes with differences in physician
> specialty, the health care delivery system, the intensity of resources
> expended and clinicians' technical and interpersonal style, and (2) to
> develop practical tools for monitoring patient outcomes and their
> determinants in routine practice (Kravitz et al. 1992, 1617).

The MOS sampled both physicians and patients in different systems of care in Boston,

Chicago, and Los Angeles, between 1986 and 1990. The final sample included 362

providers (348 physicians and 14 nurse practitioners) across a large variety of delivery

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systems and specialties, and 20,158 patients. Data were collected which described the patients, providers, treatment processes, utilization of resources and health outcomes including customer satisfaction from such sources as clinician reports, patient reports, and independent clinical examinations. Using the term "patient mix," (defined as the socio-demographic characteristics, disease prevalence, severity of illness as associated with biomedical parameters, and the functional and well-being status of an individual) Kravitz et al. (1992, 1617-23) found differences in the patient mix according to both the system of care and the physician specialty. In regards to the system of care, prepaid patients had higher scores on health perception and physical functioning scales, were less likely to have a chronic illness, and were most likely to be nonwhite (all $p < .01$). Conversely, fee-for-service (FFS) patients were generally older, more likely to be white, had chronic diseases, and had lower functional status and well-being scores.

The MOS researchers also made significant discoveries regarding the usefulness of the outcome measures collected. First, they demonstrated a general agreement between the information provided by patients on their overall health assessment and usual life activities, and that provided by the physician in terms of disease severity. Second, they established the validities of the MOS functional status and disease severity scales. This last point is particularly compelling (Kravitz et al. 1992, 1619-21) as the MOS health survey used to rate functional status and well-being contained only 20-items specially designed to, ". . . construct health status indicators for general health perceptions, physical function, role function, social function, bodily pain and mental health." Third, the researchers also demonstrated the need for adjustments in the patient mix for a given

population. Lastly, the MOS research team showed that clinical outcome measures, patient-reported functional status, and well-being outcome measures should be incorporated into any system intending to use outcome measures as a quality or value indicator (Kravitz et al. 1992, 1623).

Another relevant report on the MOS by Safran et al. (1994, 1579-86) examined the differences in the quality of primary care delivered in prepaid and FFS health care systems. Safran's team found that prepaid health systems had increased financial access and improved coordination of care for their patients. Unfortunately, these positive findings were countered by reduced patient-physician continuity and comprehensiveness of care, and by diminished organizational access and interpersonal treatment that was less than satisfactory to patients.

3.) Patient Outcomes Research Teams (PORTs)

With the reliability and validity of health outcomes gaining momentum, the Agency for Health Care Policy and Research (AHCPR) chartered the Medical Treatment Effectiveness Program (MEDTEP) to further develop meaningful outcome measures. Under MEDTEP guidance (Maklan, Greene and Cummings 1994, JS14), fourteen separate Patient Outcomes Research Teams (PORTs) were established to "...break with the traditional health services research and with traditional clinical 'efficacy' studies. . . MEDTEP research shifts the focus of health research from the issues of organization and processes to the outcomes of health care." The PORTs originated from the belief that wide variations in practice patterns were occurring across the United States that might adversely affect the quality of care rendered to individual patients. Using Medicare data

and the medical literature, the PORTs set out to pioneer revolutionary new practice guidelines and their expected outcomes. The PORTs measured outcomes based on survival rates, morbidity, complications, physical functioning, resource use (cost and readmissions), symptom relief, overall health status, role functioning and customer satisfaction with the patient-provider interaction (Malkan, Greene and Cummings 1994, JS 15-6). However, these measurements were directly tied to the effectiveness of a treatment decision through meticulous research and analysis. The results of the PORTs research have been widely accepted and are already steering the health care industry toward the widespread use of health status and outcome measures (Morrissey 1994, 36).

These landmark studies were critical steps toward the acceptance of outcomes as reliable and valid measures of quality and value. They also established that self-reported measures could be used to assess the quality of care being provided to individuals and populations. Lastly, as detailed later in the report, the studies firmly incorporated customer satisfaction measures as an integral part of the outcome measurement movement.

Customer Satisfaction Measures as Outcome Measures

The importance of outcome measures is without dispute, but it is also important to note that many respected health care researchers have made it clear that customer satisfaction measures will be the *premier* outcome measures of the future for MCOs. In addition to Donabedian's quote, Luft (Dolinsky and Caputo 1990, 31) has stated that consumer satisfaction is, "perhaps the most important dimension of HMO performance while being the least understood of all HMO research measures." In mature managed care

markets, Fincham and Wertheimer (1986, 5) postulate that, "maintaining patient satisfaction with care is crucial for HMOs." Ware (Nelson and Niederberger 1990, 410) has stated that patient satisfaction is a determinant of, "the choice of health care provider or systems, use of services, complaints and malpractice suits." Health services marketing guru MacStravic (1982, 7) has listed customer satisfaction as a key criteria for an HMO's success. As evidenced by such strong, expert opinion, the ability to measure and report customer satisfaction measures is paramount to the long-term viability of MCOs.

Through the work of many health care researchers, employee health care benefits managers and others in the health care industry, a list of "premier" health care customer satisfaction measures can be gleaned from the health care literature (see Appendix A). Although much of the early research and literature focuses on satisfaction with *hospital* care, the more recent literature has kept pace with the rapid spread of managed care by focusing on satisfaction with MCOs. This has resulted in a fundamental shift from *patient* satisfaction measurement to *customer* satisfaction measurement, a necessary change for MCOs attempting to maintain customer loyalty and build market share.

Based on the literature and interviews with experts in the field (Villani and Sampanes 1996), these customer satisfaction measures are considered the "premier" variables that MCOs will need to measure and use to ensure long-term viability: (1) *overall customer satisfaction*, (2) *satisfaction with access to care, health services, plan administration and the management of care*, (3) *satisfaction with the physician's technical and interpersonal competencies*, (4) *willingness to recommend the plan to family and friends*, (5) *intention to switch to a different plan*, (6) *successful complaint*

resolution, (7) *self-reported perceptions of overall health status and disease, and* (8) *basic demographics.* Current studies vary on the predictive capabilities of global, one-question overall satisfaction measures. However, the combination of multiple measures of satisfaction with *health care and health plan attributes and services combined with the general satisfaction measure* have proven to have moderately predictive capabilities (Allen et al. 1994, 31; Fincham and Wertheimer 1986, 7-8; Miller and Luft 1994, 1516; Ware et al. 1987). Satisfaction measures (variables) regarding the customer's perceptions with *physician technical and interpersonal competencies* are well-grounded in historical and recent studies. In fact, questions regarding the physician interaction have demonstrated moderate predictive capabilities across a range of delivery sites (Dolinsky and Caputo 1990, 34-5; Fincham and Wertheimer 1986, 7-8; Ho, Stegall and Wan 1994, 71-2; Nelson and Niederberger 1990, 416-9). The measure for *willingness to recommend the plan to family and friends* has strong foundations in the research done by Davies and Ware (1991) to design the Group Health Association of America's Customer Satisfaction Survey. One recent and very impressive study conducted by Weiss and Senf (1990, 438-41) demonstrated that measures of a customer's *intention to switch plans* are strong predictors of customer satisfaction. In addition to these measures, a key study by Moses (1995, 45) has demonstrated the importance of satisfactory resolution of customer-services related problems as a predictor of customer satisfaction. Very recent developments in the reliability and validity of *self-reported perceptions of general health and disease* have made the addition of these measures into the satisfaction battery a must for MCOs (Boles and Wan 1992, 204; Hall, Milburn and Epstein 1993, 90-91; Ware et al.

1987; Zapka et al. 1995, 76-81). Finally, while having limited predictive capabilities, *basic demographics* are a necessary component for population description and market segmenting (Dolinsky and Caputo 1990, 35-6; Zapka et al. 1995, 76-81).

Key Standardized Surveys

Using the constructs and variables that had been developed from these studies and others, researchers began to produce standardized customer satisfaction surveys which could be used by MCOs and other health care organizations to assess customer satisfaction. One of the most comprehensive studies to date regarding the development and use of standardized customer satisfaction surveys was conducted by Gold and Wooldridge (1995, 155-73). The study found that surveys were being conducted by 95 percent of HMOs and 55 percent of PPOs for quality purposes using internally-developed or industry accepted surveys (e.g., Patient Satisfaction Questionnaire [PSQ] or the Group Health Association of America [GHAA] Consumer Satisfaction Survey). The study results also suggested that the purchasers of care, management consultants and survey research firms are also involved in the survey process. Often, these researchers use the GHAA survey and the Employee Health Care Value Survey (EHCVS) as the foundations for their survey materials. Additionally, government-based programs such as Medicaid and Medicare have mandated the collection of customer satisfaction information via such survey instruments as the Medicare Current Beneficiary Survey and state-based surveys for Medicaid-risk products. Gold and Wooldridge (1995, 168-73) and other authors have also identified a new and emerging standardized survey battery: The Survey Design Project developed by the Agency for Health Care Policy and Research (AHCPR).

Through AHCPR's work, adult and child health instruments, and draft surveys for hospital care, mental health services and health plan disenrollment have been created. It is anticipated that these surveys will be released in 1996 for use in the field (NCQA 1995, 2). In addition to identifying the surveys currently being used in the market, Gold and Wooldridge (1995, 160-7) found marked differences in survey focus, item content, and methodological practices and issues. Ultimately, their study and others suggest that three basic standardized surveys or some combination therein have been most frequently used by MCOs for survey purposes: the PSQ, the GHAA survey, and the EHCVS.

Patient Satisfaction Questionnaire

As described earlier, studies from pioneers such as Hulka and Woolley helped Ware to expand the list of health care constructs MCOs and other health care organizations should measure. Based on his own work and Hulka et al., Ware et al. designed the Patient Satisfaction Questionnaire (PSQ) in 1983 (Ho, Stegall and Wan 1994, 67). Ware and his fellow researchers designed the PSQ tool to focus on the characteristics of physicians and medical services via well-defined study variables. The PSQ has multiple variables which assess the technical and interpersonal skills of providers, waiting times for the appointment process, waiting times in offices and emergency rooms, satisfaction with the costs of care, and the availability of variety of resources. Even though the PSQ continues to undergo revisions and it is still used in health care research to assess customer satisfaction, the PSQ's greatest application has been to form the foundation for many other surveys (Davies and Ware, 1991, 3). Testing of the PSQ tool has demonstrated it is a reliable and valid instrument (Ho, Stegall and Wan 1994, 67).

The GHAA's Consumer Satisfaction Survey and User's Manual

The second edition of the GHAA survey was released in May 1991 after alterations based on information received during testing and use of the first edition. The current GHAA survey is a 63-item instrument that is broken into two separate batteries: the satisfaction battery (47-items) and the additional variables battery (16-items). Within these two batteries, a variety of health care constructs have been identified. As with the EHCVS, guidelines on survey sampling, administration and data analysis are included in the user's manual (Davies and Ware 1991, 1).

The 47-item *satisfaction battery* originates from the PSQ developed by Ware in 1983 and input from GHAA's research and legal departments, relevant literature, reviews from the use of the first edition and continuing work by Davies and Ware. The first section of the satisfaction battery has 31 questions that center on the customer's satisfaction with health care services and providers. Based on the Form III PSQ and using a five-point "excellent" to "poor" evaluation response scale (excellent, very good, good, fair and poor), this section (31-items) measures eight constructs of care ranging from accessibility and availability of services and providers to technical quality of care. The second section of the satisfaction battery has 16 questions that focus on the customer's satisfaction with the health plan. Interestingly, this section (16-items) was completely new to the 1991 edition of the GHAA survey, and had been gleaned from sample items submitted by participating health plans or were written new for the most recent edition. The constructs measured in this section are features specific to the health plan or health

insurance plan. Table 4 summarizes the satisfaction battery section of the GHAA survey

(Davies and Ware 1991, 3-8).

TABLE 4

GHAA SURVEY SATISFACTION BATTERY	
Multi-Item Scales	**Number of Related Questions**
Access	11
Finances	2
Technical Quality	3
Communication	3
Choice and Continuity	3
Interpersonal Care	5
Services Covered	3
Information	3
Paperwork	3
Costs of Care	2
General Satisfaction	4
Single-Item Scales	
Overall Care	
Time Spent	
Outcomes	
Overall Quality	
Overall Plan	

Source: paraphrased from the GHAA Consumer Satisfaction
Survey and User's Manual (Davies and Ware 1991, 8)

The second battery for the GHAA survey is called the *additional variables*

battery. This battery (16-items) contains variables that measure survey respondent

demographics (seven items), use of services (three items), health status (one item), access to care (three items) and intentions regarding plan related behaviors (two items). From this information, users are able to assess useful population information and focus on important determinants of customer satisfaction and loyalty to the plan (Davies and Ware 1991, 9-11).

Employee Health Care Value Survey

The EHCVS was the result of a first-ever effort by three large U.S. Corporations (Xerox, GTE and Digital) to form a health care customer satisfaction consortium. The main goal of the consortium was to develop a standardized survey instrument and process which could then be used to evaluate the 32 different health plans providing services to the consortium. Independent research firms were used to develop the survey and conduct analyses, and for data collection purposes. The result was a 154-item survey which combined elements from the second edition of the GHAA survey, the MOS 36-Item Short-Form Health Survey (SF-36) and the Healthier People, Health Risk Appraisal: Version 4.0 by E.B. Hutchins into one comprehensive survey. Guidelines for survey sampling, administration and data analysis were also reported in the EHCVS (Allen et al. 1994, 26-28 and 41).

The survey focused on two main categories: plan performance and health burden. Constructs for the *plan performance* component included satisfaction measures for health care delivery ratings, delivery experience reports, plan administration ratings and "bottom-line" performance indicators. To complement this "health systems" battery, the *health burden* constructs measured demographic characteristics, health status ratings, medical

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condition reports and health risk behavior reports (Allen et al. 1994, 29). Together, the variables from these two categories compose the survey.

NCQA Survey

Despite the abundance of reliable and valid survey instruments already in use by MCOs, a new survey tool was recently released by the NCQA which provides more detailed information over the survey instruments discussed earlier. Released in 1995, the NCQA Annual Member Health Care Survey Manual, Version 1.0 (NCQA survey) has taken the best components of other standardized surveys in the field, and coupled them with information that has emerged from the managed care industry within the last four years. First, compared to the GHAA survey which was primarily developed for employer use, the NCQA survey was developed with MCOs as the primary users of the survey. Second, the survey focus changed from a heavy emphasis on provider-related variables, to a more balanced emphasis between provider and plan variables. Third, the NCQA survey expands the health status variables without overburdening the respondents taking the survey. Finally, the NCQA survey provides a broader range of information within relatively the same survey length as other standardized surveys.

The NCQA survey (see Table 5) has four major sections: (1) screening, (2) satisfaction with care and plan services and features, (3) respondent's health and daily activities, and (4) socio-demographic information (NCQA 1995, 1). It is important to note many of the questions in the NCQA survey are composed of sub-questions. Therefore, although the survey lists a particular number of questions per section, the question may be composed of multiple sub-parts. The five *screening* questions assess

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membership, enrollment, and the usage of in-and out-of-network provider/facility use. These questions originate from the Agency for Health Care Policy and Research (AHCPR) Survey Design Project (1995) discussed earlier. This data is generally used for verification purposes, but could also be used to risk-adjustment the sample. The twelve questions assessing *satisfaction with care and plan services and features* are further differentiated into health care and plan (items 6 through 13) and further information on services (items 14 through 17) sections. The majority of these survey items come from the GHAA survey (1991), although the wording and rating scales have been refined to improve their relevance to the consumer and to reduce the multicollinearity between scales (NCQA 1995, Appendix II-6). The *health and daily activities* section has a combination of ten single and multi-item questions. The RAND HIE and MOS studies provide the majority of background on item selection for this section. Moreover, work started by Ware et al. in 1995 to develop a shorter version of the 36-item Short Form Health Survey (SF-36) composes a major portion of this section of the survey (NCQA 1995, 6). In addition to assessing the health burden of given populations and product lines, the NCQA anticipates this section will also be used for risk-adjustment purposes. Lastly, the six-item *socio-demographic* section measures general population characteristics. As with the screening section, the socio-demographic survey items were refined from questions in the AHCPR instruments (NCQA 1995, 6).

TABLE 5

NCQA SURVEY BATTERY	
Survey Section	**Number of Related Questions**
Screening	5
Satisfaction with Care and Services	
1) Health Care and Plan	8
2) Further Information on Services	4
Health and Daily Activities	10
Socio-demographic	6

Source: paraphrased from the NCQA Member Satisfaction Survey,
Version 1.0, "Background on Survey Items"
(NCQA Survey 1995, 5-6)

Literature Pertaining to Survey Sampling, Administration and Methods/Procedures

The NCQA Survey provides detailed instructions on sampling and data collection. However, during the course of planning and implementing the survey for this investigation at SHP, current literature and corporately-mandated physician and staff sensitivity/courtesy measures resulted in deviations from the NCQA's sampling and data collection instructions. As a result, specific literature relating to and used for the development of the methods and procedures for the study is discussed. In particular, survey length and salience, response points and rating scales and anchors, and mail survey administration were important issues impacting the study's methods and procedures.

Survey Length and Salience

A recent study by Bean and Roskowski (1995, 20-6) provides great insight into survey length. In their study, the researchers demonstrated that longer surveys do have lower response rates. This was particularly true in surveys where the survey salience (the questionnaire's importance as viewed by the survey recipient) was high and the questionnaire lengths were dramatically different. Paul and Bracken (1995, 45-9), survey development consultants, give the following recommendations regarding survey length: no more than 80 to 100 questions (not including demographics) and no longer than 30 minutes to complete. Moreover, their consensus is that survey salience is paramount to survey success. The researchers also found that high response rates (approximately 80%) are not essential to obtaining unbiased data. Thus, the researchers concluded placing more emphasis on survey length and salience was a productive method of enhancing survey response rates.

This literature was important in determining whether or not to add additional questions to the survey. Ultimately, questions on physician and staff sensitivity and courtesy and specific health behaviors were added to the survey. These questions were added because they were important to corporate goals for the SHP and for SETON network employees and did not substantially change the time needed to complete the survey (complete time was 15 to 20 minutes).

Response Points, Rating Scales and Anchors and Response Bias

An abundance of survey design experts in health care and other industries have written volumes on response-scale points and rating scale anchors. A comparative study conducted by Ross, Steward and Sinacore (1995, 392-406) provides one of the most exhaustive commentaries on the subject of rating (measurement) scales. In their study, the researchers examined the variability in satisfaction responses using the seven different scales summarized in Table 6. The findings from the study rated the "general

TABLE 6

SUMMARY OF RATING SCALE EFFECTIVENESS		
Measure (Scale Used)	Description	Rating
Global Satisfaction (*Visual Analogue*)	100 millimeter visual scale ; "X" marked on the scale (1-item)	Good
Multidimensional Evaluation of Quality (*Modified PSQ*)	Five-point evaluation response based on "poor", "fair", "good", "very good", "excellent" (29-items)	Good
General Satisfaction	Five-point Likert scale (6-items)	Poor
Physician Satisfaction	Five-point Likert scale (4-items)	Poor
Overall Satisfaction (*Modified PSQ*)	Five-point evaluation response based on "poor", "fair", "good", "very good", "excellent" (2-items)	Good
Behavioral Intention (*Bipolar Scale*)	Four-point evaluation response based on "definitely yes", "probably yes", "definitely not", "probably not" (4-items)	Poor
Willingness-to-Pay (*Dollar Value Scale*)	Respondents asked "yes" or "no" if they would pay a certain dollar value for the appointment and "what would be the most they would pay" (2-item)	Fair

Source: paraphrased from Ross, Steward and Sinacore (1995, 392-406)

satisfaction", the "physician satisfaction" and the "behavioral intention" scales as poor measurement scales. This was mainly due to the fact that these measures demonstrated poor resistance to acquiescence bias and poor reliability among high acquiescence respondents. The "willingness-to-pay" scale was rated as fair due to its resistance to acquiescent bias; however, it has limited practical application in statistical analysis. The authors go on to identify the "global satisfaction," the "multidimensional evaluation of quality" and the "overall satisfaction" scales as the best for use in customer satisfaction surveys because of their resistance to bias and excellent reliability.

A different study conducted by Paul and Bracken (1995, 45-9) provided important information on response points, rating anchor scales and response bias. The authors stress the importance of matching scale response points and rating scales anchors to the information being assessed. Furthermore, if different rating scales are going to be used, the authors advise using the minimum amount necessary and clustering questions with similar content within the same scale. Finally, the authors suggest the survey instrument be tested for any response bias prior to its administration. If response bias exists, Paul and Bracken recommend including negatively and positively worded questions to assess survey bias. Findings from the study are summarized in Table 7.

The information on response points, rating scales and bias was used to construct the additional items added to the survey. For the physician and staff sensitivity and courtesy questions, the PSQ evaluation response (poor, fair, good, very good, and excellent) was used. Additionally, the questions had been tested on hospital surveys and did not demonstrate response bias. Health behavior questions added to the survey were

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mainly assessed by dichotomous and frequency-related variables; therefore, response

points and bias were eliminated.

TABLE 7

SUMMARY OF RESPONSE POINT, RATING SCALE ANCHORS AND RESPONSE BIAS THEMES	
Item	**Information to Be Considered**
Response Points	Are dependent on the information required
	Use odd number of points with meaningful but neutral midpoint
	Include more response points to refine the data collected
Rating Scale Anchors	Label the scale's high end with the most favorable anchor
	Content of the question dictates the rating scale and anchor used
	Use the least amount of different rating scales possible in one survey
Response Bias	Avoid scales that have demonstrated acquiescence bias

Source: paraphrased from Paul and Bracken (1995, 45-9)

Specific Issues for Mail Surveys

In the May 1995 issue of American Demographics, Kephart offers specific

suggestions on how to improve the efficiency of mail surveys via information from Katie

Klopfenstein of Marketvision Research Inc. of Cincinnati, Ohio: (1) use a personalized

cover letter, (2) make certain the questionnaire is uncluttered, (3) plan on conducting

multiple mailings, and (4) include an incentive in the mail-out. The most important of

these factors is the suggestion to include respondent incentives in the mail survey. Based

on this article and other information in the literature, incentives were considered appropriate for mail surveys and actually improved response rates without substantially influencing response bias. As a result of this information and based on prior survey experience within the SETON network, the SHP President determined that two incentives should be added to the survey package: a fresh one-dollar bill and a return postcard making the respondent eligible for two free months of health care premiums.

Literature Pertaining to the Utility of the Findings

Once the data has been collected and analyzed, it is important to identify what value it adds to customers in the health care value chain. Four major categories of customers are the primary users of survey results: (1) MCOs, (2) employers, (3) other care providers in the delivery process, and (4) health care consumers. Although the data is used for a variety of purposes, Table 8 summarizes the main use of data for the different customer groups. As MCOs are the focal point for this study, implications and utility of the findings for MCOs are discussed in detail.

TABLE 8

USES FOR CUSTOMER SATISFACTION DATA				
	MCOs	Employers	HC Others	Consumers
Purchasing	X	X		X
QI Programs	X	X	X	
Accreditation	X		X	
Planning	X	X		
Resourcing	X	X	X	
Communication	X	X	X	
Marketing	X	X		

Purchasing Decisions

Contractual arrangements are an integral part of most MCO's network development strategy. Within this strategy, customer satisfaction measures should play a key role in contract negotiations and arrangements. MCOs need to ensure that suppliers of goods and services along the continuum of care are willing to participate in all customer satisfaction survey efforts. This includes all provider groups, health care facilities, and service and materials suppliers for the MCO's network. By measuring patient satisfaction with different aspects of care (i.e., various suppliers in the value chain), MCOs can readily identify those contracted suppliers that are adding relatively more value to the network and those that are not. In doing so, the MCO can arrange pricing and delivery structures that are congruent with the level of service the MCO's customers perceive they are receiving along the continuum of care (Moses 1995, 44). One of the more common applications in this arena has been the use of customer satisfaction survey information as a criteria for physician contract renewal (Gold and Wooldridge 1995, 156). As summed up by Dr. Stephen Pew (Bergman 1995, 20), Senior Director of Improvement Information at VHA, Inc., Irving, Texas, "Managed care organizations are paying increased attention to subscribers' satisfaction with the providers they've chosen. If subscribers aren't happy, they're not likely to become policy holders."

Quality Improvement (QI) Purposes

As with other industries, quality improvement has taken hold in MCOs. Although QI efforts in MCOs fall along a continuum from very limited QI programs to true QI philosophy, strategy and operations, MCOs demonstrating viability for the future have

started their QI journey. An overwhelming drive to meet or exceed customer needs is inherent in the QI philosophy. Customer satisfaction information is one component of identifying these customer needs and/or expectations.

Another emerging initiative within MCO's QI Programs are the "Report Cards" that have cropped up throughout the United States. In an effort to meet purchasers' demands for a method to assess MCO quality and hold MCOs accountable for the services they provide, MCOs have started developing report cards of their performance. Current report cards in the market are largely based on NCQA's Health Employer Data and Information Set (HEDIS) or are self-designed by individual MCOs. Regardless of whether the NCQA's HEDIS or a self-designed tool is used, the report cards generally focus on measuring quality, access, patient satisfaction, membership and utilization, and financial aspects of the MCO. Despite the fact that critics of the report cards cite inaccurate data recording and reporting and a lack of comparability between non-standardized tools, the information collected and measured under these systems provides MCOs with valuable feedback that can, at a minimum, be used for internal QI programs (Chase 1996, 1[B]). Externally, while remembering that results should be reported with some baseline measure for comparison, MCOs can use the report cards as marketing tools (Ruth and Detmer 1995, 34-36).

Accreditation Purposes

While MCOs continue to drive the integration of health care financing and delivery, accreditation is rapidly becoming a criteria for securing new accounts. Already, twelve major corporations (e.g., Allied Signal, Ameritech, General Electric) require

NCQA accreditation from the MCOs providing health benefits to their employees. It is anticipated this trend will continue to rise, as suggested in a 1994 study of 54 employers reporting 24 percent that already require their MCOs to be NCQA accredited, and another 63 percent that anticipate adding this requirement within the next three years (Sandrick 1995, 54). According to David Nash, an M.D. at Thomas Jefferson University in Philadelphia, even though both the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) and the National Committee for Quality Assurance (NCQA) accredit networks and MCOs, it "appears that NCQA has won the public relations war" for employers' approval (Sandrick 1995, 54).

Strategic Planning and Resourcing

The results from customer satisfaction surveys can also be used in a MCO's strategic planning and resourcing processes. Results from customer satisfaction surveys may be used by governing bodies as part of the long-term planning process. Although work by Gold and Wooldridge (1995, 156) suggests that surveys of new enrollees and disenrollees are being used to support strategic planning efforts, the prime examples of customer satisfaction data being used for such purposes is best illustrated in non-health related industries. For example, the 1993 Malcolm Baldrige winner in the small business category, Ames Rubber Corporation, regularly uses the results of their customer satisfaction surveys as a mechanism for resource allocation through the recommendations of their customer satisfaction team. Furthermore, this company has fundamentally altered its business structure as a result of satisfaction surveys by creating two separate technical-services groups: one to service the day-to-day product needs and one for strategic product

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planning (Moskal 1994, 40). Clearly, the strategic planning and resourcing principles used by the Ames Rubber Corporation can also be used by MCOs for similar purposes.

Communication Opportunities

Communicating the results from customer satisfaction surveys is one of the best public relations opportunities MCOs have at their disposal. Not only does communication of the survey results send a clear message that the MCO considers customer feedback vital to their business, but it also serves as an education and information tool. At a minimum, the survey results should be mailed to MCO subscribers (Layton 1993, 85). The mailing should educate enrollees on how the results affect them personally, and the steps that they can take to positively impact their interaction with the plan and its providers. Furthermore, consumers should be informed about the steps the MCO intends to take to address areas of concern identified in the survey and to build upon areas of "excellence" identified in the survey process. In doing so, the MCO is taking positive steps towards improving member satisfaction in the future.

Marketing Purposes

Dolinsky and Caputo eloquently summarize the various uses for customer satisfaction survey data. The authors first suggest that the demographic data collected can be used to segment a MCO's health care market. Then, they suggest that MCO's identify their key satisfiers and develop competitive advantages based on the findings. By differentiating health care products based on satisfaction within various segments, the MCO can ensure more efficient and effective promotional strategies. Lastly, MCOs can

use the information from such surveys to identify members that continue to stay with the plan, trending their results over time to ensure customer loyalty (Dolinsky and Caputo 1990, 36-8).

Purpose

The purpose of this study is to use the NCQA Annual Member Health Care Survey instrument and instruction manual to implement the survey process, conduct a baseline analysis and determine key predictors of customer satisfaction in the SHP's two current LOBs (HMO and PPO). The proposed dependent and independent variables are identified and operationally defined in Appendix B. The formal alternate and null hypotheses for the study are detailed below.

Hypothesis One

- $H_a 1$: With less than 12 months total enrollment, differences among LOBs are predictive of key literature variables including overall customer satisfaction.

$$Y_{(1,2,3 \ldots n)} \text{ (Overall Score)} = f(\text{LOB})$$

- $H_o 1$: With less than 12 months total enrollment, differences among LOBs are **NOT** predictive of an key literature variables including overall customer satisfaction measure.

$$Y_{(1,2,3 \ldots n)} \text{ (Overall Score)} \neq f(\text{LOB})$$

- H_a2: Overall customer satisfaction for the HMO LOB is a function of one or more independent variables.

  Y (HMO Overall Customer Satisfaction Score) $= f(a_oU + b_1X1 + b_2X2 + \ldots + b_nXn)$

- H_o2: Overall customer satisfaction for the HMO LOB is **NOT** a function of one or more independent variables.

  Y (HMO Overall Customer Satisfaction Score) $\neq f(a_oU + b_1X1 + b_2X2 + \ldots + b_nXn)$

Hypothesis Three

- H_a3: Overall customer satisfaction for the PPO LOB is a function of one or more independent variables.

  Y (PPO Overall Customer Satisfaction Score) $= f(a_oU + b_1X1 + b_2X2 + \ldots + b_nXn)$

- H_o3: Overall customer satisfaction for the PPO LOB is **NOT** a function of one or more independent variables.

  Y (PPO Overall Customer Satisfaction Score) $\neq f(a_oU + b_1X1 + b_2X2 + \ldots + b_nXn)$

CHAPTER TWO

METHODS AND PROCEDURES

Subjects

Potential subjects for this project included all 5,434 enrolled subscribers and their eligible beneficiaries receiving health care services through the SETON network benefits package. Although the NCQA "Sampling and Data Collection Protocol" (see Appendix C) instructs users to administer a proxy survey for eligible beneficiaries under the age of 18, this guideline was not followed given the lack of supporting literature and the strong likelihood a single household could potentially receive multiple surveys. Of the original subjects, the 18 and older limitation reduced the data set to 3,794 potential subjects.

Data Sampling, Collection and Purification

Data Sampling

The NCQA's protocol outlines the suggested procedures for the NCQA survey sampling and data collection. To begin the process, two separate data files (one for HMO members and one for PPO members) were retrieved from the SHP claims processing software. The files were combined into one database that was checked for thoroughness and accuracy. The check revealed the data extraction process resulted in the subscriber's name being placed in the name block instead of the actual member name, and that members' whose coverage had been terminated were still included in the data set. After

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discussing the issue with system programmers, a second retrieval was attempted which proved to be successful. Therefore, two complete files with all the necessary elements for the 3,565 HMO members and 1,869 PPO members existed. The age criterion of age 18 and older was applied to each of the data files in the database which reduced the set to 3,794 potential subjects, 2,430 of which were HMO members and 1,364 of which were PPO members. As stipulated by the protocol, 825 members from each distinct product line were selected using the random seed function in the Statistical Program for the Social Sciences® (SPSS) 6.1 for Windows® software package. Therefore, 34 percent of eligible HMO members (825/2,430) and 60 percent of eligible PPO members (825/1,364) were selected for inclusion in the study. Once the random seed function was completed, each PPO member was assigned a survey number from 1,000 to 1,824 and each HMO member was assigned a survey number from 2,000 to 2,824. The HMO and PPO files were then combined into one master database file which was used for the survey process. The initial mail-out included 1,650 total subjects.

For the initial mail-out, surveys were distributed according to the NCQA protocol with the following exceptions: (1) a fresh one-dollar bill was included in the initial mail-out package, (2) a business-reply postcard was included in the survey materials making members who returned the survey and card eligible for two free-months of health care premiums, and (3) flat catalog envelopes were used instead of windowed envelopes. As discussed earlier, the incentives incorporated into the survey process are well-grounded in the literature. Additionally, the response rate on other SETON network employee-related surveys had traditionally been only seven to ten percent, and senior leadership thought an

incentive program would improve the response rate without introducing substantial bias. As for the change in envelope style, the flat catalog envelopes were less costly in both raw materials cost and for the costs associated with folding the survey materials to make them fit properly in the windowed envelopes.

For the second mail-out, the package included the personalized cover letter, a business-reply envelope to return the survey to the SHP and the "health care premium postcard." The personalized cover letter was changed to remove the reference to the one dollar bill no longer included in the survey package. Additionally, the instant incentive (i.e., the one dollar bill) was not included in the second mail-out package as it was considered inappropriate to reward nonresponsive behavior with an additional incentive. Finally, the researcher made the decision to include the "health care premium postcard" in the second mailing as it did not increase production cost, and would only add to postage costs if the postcard was returned to the SHP. Sample mail pieces from all mail-outs, including the final survey used for the study, are located in Appendix D.

Data Collection

The three phase (six weeks) NCQA procedure was followed for the data collection process except for the following deviations: (1) the postmark on the return envelope was used to identify each return phase, (2) the replacement questionnaire for non-responders was mailed at week five, and (3) a total of 384 surveys per product line were not achieved. First, the postmark date on the business-reply envelope was used as an identifier for determining which phase the survey was placed in as it was returned. Three return phases were designated that mirrored the six week mail-out phase in the NCQA protocol.

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Although the protocol does not stipulate that returned surveys should be placed into a return category, the health care and service industry literature does indicate differences in responses may be a function of when a survey is returned. Therefore, a process for identifying survey return seemed appropriate for the study.

The second deviation from the protocol occurred during the replacement mail-out for non-responders. Due to production problems with survey printing, mail-out of replacement surveys was delayed by one week. As a result, phase two of the data collection process was actually three weeks compared to the recommended two weeks.

The final deviation during the data collection phase was the expected response rate. The protocol stipulates that 384 completed surveys from each product line must be collected for, "the data to be considered statistically precise" (NCQA 1995, 32). Hence, the expected return for SETON's two product lines should have been 768 or more completed surveys. After the seven week data collection period, 338 completed HMO surveys and 352 PPO surveys had been returned. Even though this did not meet the NCQA recommended levels for statistical precision, the central limit theorem suggests a sample size of 30 or more is adequate for enabling the researcher to approximate a normal distribution. Additionally, as the sample size grows, the more likely it is that the sampling distribution of the mean will approach a normal distribution (Spatz 1993, 145). As such, a potential sample size of 690 total surveys (338 HMO and 352 PPO) was considered appropriate for the purpose of this study.

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Response Rates

The response rates for the survey are summarized in Table 9 and are based on the 1,650 initial surveys distributed. The overall response rate for the survey (44.2%) was considerably higher than expected for SETON employees (7 to 10%) based on previous experience. It is interesting to note that the response rates for HMO members (43.4%) and PPO members (45.1%) are nearly equal. The phase return rates for HMO and PPO members are also equally proportioned. Consequently, the yield prior to data purification was 690 completed surveys (338 HMO surveys and 352 PPO surveys).[1]

TABLE 9

SURVEY RESPONSE RATES			
	Overall Results	HMO Results	PPO Results
Number Mailed	1,650	825	825
Non-deliverable	4.6% (76/1,650)	5.2%(43/825)	4.0% (33/825)
Incorrect Coverage	1.0% (14/1,650)	<1.0% (3/825)	1.3% (11/825)
Potential for Return	1,560	779	781
Overall Returned	44.2%(690/1,560)	43.4% (338/779)	45.1% (352/781)
Phase 1	59.7 % (412/690)	61.2% (207/338)	58.2% (205/352)
Phase 2	23.3% (161/690)	22.8% (77/690)	23.9% (84/352)
Phase 3	17.0% (116/690)	16.0% (54/338)	17.9% (62/352)

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[1] Process Note: Fifty-three (5) of the 690 surveys returned had the original survey identification number either removed or altered. The solution: PPO members were sequentially assigned a new survey number starting at 3,000 while HMO members were assigned a new survey number starting at 4,000.

Data Purification

Once the data collection period ended, the data purification process started. The process was broken into four distinct stages: (1) survey data entry (2) data transposition and transformation (3) elimination of cases and variables, and (4) derivation of calculated variables (see Figure 2). As accomplished by the researcher, this process was iterative, requiring more time and effort than was anticipated. This could have been prevented had the researcher dedicated more time during the initial stages of the research process to more succinctly plan the data file needed for the analysis and hypothesis testing.

FIGURE 2

DATA PURIFICATION PROCESS
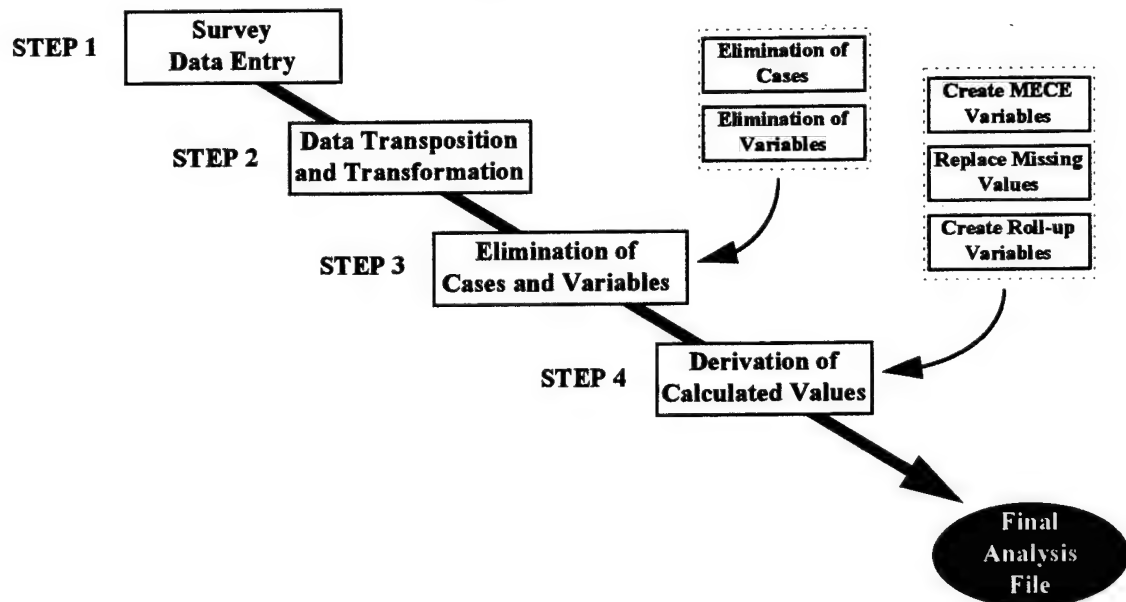
Survey Data Entry

A custom database application for data entry was created using Microsoft Access®. The database possessed two features which improved data entry accuracy: real-time data validation and customized forms for data entry. The validation feature prevents

errors in data entry by allowing the researcher to limit the data entry to only those numeric values from each individual survey question. For example, question eleven from the survey asks the respondent to rate his or her overall satisfaction with the health plan using a seven-point response scale. The validation feature used for this question only allows the data entry person to enter a "1 - 7" or "99 for no response".[2] In addition to the validation feature, the database also permits the creation of a custom data entry form which makes data entry more intuitive and reduces data entry training time. Appendix E has sample printouts portraying these features.

To further facilitate data accuracy, data entry was conducted in "real time" over a nine week period for three hours daily. This ensured that data entry was not hurried and allowed the researcher to check each record twice during initial entry. Moreover, the researcher spot checked ten percent of all 690 records prior to accomplishing any data transposition or transformation. By using the database features and data entry quality checks, the researcher improved the quality of data by preventing inadvertent data entry errors.

The last step for survey data entry was to develop the SPSS 6.1 for Windows® file needed for completing the statistical analysis. This step was completed by importing the database file into a spreadsheet, and then importing the spreadsheet file into SPSS 6.1 for Windows®.[3] All data entries from the 690 surveys (cases) returned were successfully entered into the statistical software.

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[2] Process Note: All survey questions were coded "99 = no response" (height and weight variables were coded "999 = no response").

[3] Process Note: Use Lotus® for these steps. Microsoft Excel® drops the last case when it imports data into SPSS 6.1 for Windows®. Also, SPSS 6.1 would not accept all 690 record simultaneously; therefore, (continued)

Data Transposition and Transformation

The proposed variable list discussed in the "Purpose" section of this paper was the starting point for all variable transpositions and transformations. Table 10 outlines the raw variables that were transposed for data analysis purposes. As suggested in the literature

TABLE 10

Question Number	Response Circled	Scored As	Question Number	Response Circled	Scored As
13	1	4	11	1	7
	2	3		2	6
	3	2		3	5
	4	1		4	4
12, 19, 23, 26	1	5		5	3
	2	4		6	2
	3	3		7	1
	4	2	1, 3, 5a, 5b, 10, 21a, 21b, 22a, 22b, 27a - e, 28a - l, 29(3)a, 29(3)b, 29(5)a - e, 31,	1	1
	5	1		2	0
24a, 24b	1	6			
	2	5			
	3	4			
	4	3			
	5	2			
	6	1			

separate Lotus® files for the PPO and HMO groups were created, imported and then combined in SPSS 6.1. for Windows®

and as outlined in other surveys (e.g., GHAA Survey), the highest value from the scale was associated with the most favorable outcome or response. Bipolar scale variables that met an ordinal level definition were considered interval level data for analysis purposes based on the ordinal-interval assumption. Simply stated, this assumption requires the consistent assignment of numbers to the properties of persons, objects or events and the meaningful categorization of such data in order to study quantitative relationships among variables (Knapp 1990, 121-3). The use of such an assumption allows the researcher to use parametric statistics for a more meaningful analysis. Mathematical statistics literature clearly indicates that scale properties are not a requirement for the use of various statistical procedures, and that empirically it matters little if ordinal scale data is treated as interval data (Gaito 1980, 564-7).

Table 11 outlines the data transformations for study variables. As opposed to data transposition, transformation involves a change in the data's fundamental information. The most important items to consider among this set are those questions which were *data dependency questions*.[4] In essence, these questions should not have responses circled unless specific criteria were met in the preceding question(s). As an example, survey respondents answering "no" to both parts of question five, should not have responded to question six. In these cases, the decision was made to recode the data to a "pure state" by creating missing values in the data set if the stated criteria were not met. Unfortunately, this approach lead to significantly lower response rates for these variables compared to all

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[4] Process Note: Although the second part of question three (3a) was a *data dependency question*, the recent acquisition of the city hospital lead the researcher to not transform this variable. As with these types of questions, the descriptive statistics were reported separately and the question (variable) was not used in any inferential statistic analysis.

other raw variables. However, this was the most sound decision for preventing the introduction of unwanted errors into the data set. For the data dependency variables remaining after the data purification process was complete, the descriptive statistics were reported separately and the variables were not used for inferential statistical analysis.

TABLE 11

DATA TRANSFORMATION	
Question Number	**Decision Made**
6	If (5a ="no" or "missing) and (5b ="no" or "missing") then 6 = "missing"
10a	If (10 ="no" or "missing"), then 10a = "missing"
29(3)b	If (29(3)a = "no" or "missing"). then 29(3)b = missing

29(4)	If (29(3)a = "no" or "missing"). then 29(4) = missing
	
	If (29(3)a = "yes" and 29(3)b = "yes"), then 29(4) = missing

29(6)	If (29(5)a through 29(5)e ="no" or "missing"), then 29(6) = missing
Age	"Date of birth" transformed to "age"

Once these steps had been completed for all 690 records (surveys), the descriptive statistics (mean, standard deviation, minimum and maximum values and valid N) and frequencies were calculated for all raw variables. These statistics were then used to determine outliers in the data set. Once the outliers were identified, values in the data file were checked against the responses from the actual survey and corrections were made as necessary (see Table 12). As a result of this data check, the potential survey set was reduced to 689 because one record had a respondent age of 13 years which violated the age criterion established at the onset of the study.

TABLE 12

Survey Number	Decision Made
1200	Weight entered 320 lbs; correct, NO CHANGE
1683	Age entered 13; correct, REMOVE FROM DATA SET
2030	Weight entered 1 lbs; correct, REPLACE WITH MEAN
2356	Weight entered 325 lbs.; correct, NO CHANGE
2374	Height entered 50 in.; correct, NO CHANGE
2524	Weight entered 35 lbs.; incorrect, CHANGE TO 135 lbs.

<u>Elimination of Cases and Variables</u>

Based on the descriptive statistics and frequency set for 689 surveys, a series of analyses were run to determine what cases should be excluded from the data set. First, the count function in SPSS 6.1 for Windows® was used to determine the percentage of raw variables (questions) that were completed for *each individual case* (survey). The next step was to determine the listwise percentages completed (i.e., the percentage completed for each raw variable across *all cases*). Once these two steps were finished, the results were searched for trends and further analysis was conducted as outlined in Appendix F. Based on the analysis, the decision was made to delete all cases from the final data set that had less than 75 percent of the raw variables completed, leaving a final data set with 611 cases (n = 611).

To determine the variables that would be eliminated from the final data set, the listwise percentages were calculated using the new data set (n=611). Using an assumption

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that variables missing greater than 10 percent of their responses were either the result of a

poorly worded question, or the question was not of great enough importance for this

sample population to answer, variables were deleted. Table 13 indicates the raw variables

that were deleted from the study.

TABLE 13

ELIMINATION OF INDIVIDUAL VARIABLES		
Question Number	Variable Description	Reason Eliminated
5a	Visits received out-of-network	> 10% missing
5b	Hospital stays out-of-network	> 10% missing
6	Reason care sourght outside the network	> 10% missing
9c	Ability to get a specialist referral	> 10% missing
15b	Wait time for minor illness	> 10% missing
15c	Wait time for chronic illness	> 10% missing
15d	Wait time for urgent illness	> 10% missing
29(3)b	Exercising at personal best level	> 10% missing
29(4)	Reason not exercising regularly	> 10% missing

Of the variables deleted from the set, the elimination of those questions related to

the use of health services (questions #5a, #5b and #6) and wait times (questions #15a,

#15b and #15c) represent the loss of valuable information for the health plan. Speculating

on the reason why these questions were left unanswered, the researcher believes that

limited time (i.e., seven months) survey participants had in the program tremendously

impacted their comfort with answering the questions. Many survey participants

commented in the survey margins that they had no basis for answering these particular

questions and that a "not applicable" answer was not included. Further iterations of the

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survey should help determine whether the limited enrollment contributed to these questions being left unanswered.

<u>Derivation of Calculated Values</u>

For variables that were *time-related* or *bin categories*, the decision was made to use mutually exclusive, categorically exhausted (MECE) or "dummy" variable data sets. This decision was largely based on recent developments in parametric statistics, modeling and prediction using generalized line models (Baxter 1990) that requires extensive use of categorical or "dummy" variables (Ward & Jennings, 1973; Kerlinger, 1986; Kerlinger and Pedhazur, 1973; Pedhazur, 1982; Cohen and Cohen, 1983; Edwards, 1979, 1984). The use of such an approach provides more meaningful information as the proportion of group membership for each *bin* and its functional relationship to the dependent variable is more clearly defined.

Once the "dummy" variables had been created, decisions regarding missing values were made for the data set. Since all variables remaining in the data set had ten percent of less missing values, the researcher decided to replace the missing values with the variable's mean. This criterion was discussed with the consulting statistician and was determined to be acceptable practice.

The last step in the data derivation process was to create another set of derived variables: *roll-up variables*. This set of variables was derived by summing the values of all related sub-questions. If the validity of these summed variables is established, then the roll-up variable can be appropriately used for inferential statistical analysis, ultimately

reducing the number of variables without losing meaningful information. Table 14

summarizes the derived variables for the study.

TABLE 14

DERIVED VARIABLES				
Summed Roll-up Variables			"Dummy" Variables	
Question	Min.	Max.	Question	Number of MECEs
Question # 7	15	75	4a, 4b, 18, 36	4
Question # 8	7	35	2, 16, 33, 34	5
Question #9	3	9	35	6
Question #27	0	5	15a, 17	7
Question #28	0	12		

Description of the Final Data Set

The persons, objects or events used in this study are 611 NCQA Member

Satisfaction surveys (n = 611) originating from a sample of SETON network employees,

age 18 years or older, eligible for the SETON health benefits package, residing in central

Texas. Of the 611 surveys, 303 respondents were enrolled in the HMO line-of-business

and 308 were enrolled in the PPO line-of-business. Appendix G outlines the final variable

list and includes the operational definition for each variable.

Reliability and Validity

Reliability and validity are key components of any study which must be addressed.

Kerlinger (1986) suggests that the main technical function of research and design is to

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control variance. As such, he offers the "Maxmincon" principle as an effective starting position for controlling variance in the research process. This principle is employed during research design and entails three parts: (1) maximizing the variance of variables, (2) minimizing the error or random variance, including so-called errors of measurement, and (3) controlling the variance of extraneous or "unwanted" variables that may have an effect on the experimental outcomes. Ultimately, these principles try to control the variance of the dependent variable(s) after the study has been done.

Several steps were taken to maximize the variance of variables used. The starting point was the extensive variable list used in the study. Where possible, variables were kept in the study as long as they met the equal to or less than 10 percent missing values criterion. Additionally, using the largest sample size feasible within the study's parameters for quality was also a key component of maximizing variable variance. Of the 689 potential surveys for inclusion in the study, greater than 88% (n=611) were incorporated into the final data set.

There were several possible sources of error that may have threatened the validity of the study. First, respondent error, or that error caused by respondents incorrectly reporting information, may have influenced the study. Second, error could have occurred during the initial data extraction. Third, experimenter error could have affected the study if data was entered incorrectly into the database used for storing survey responses. Fourth, additional experimenter error could also have been introduced in the data transformation process. As discussed earlier, numerous quality checks were built into the data sampling and collection process which should have limited these sources of error.

The extraneous or "unwanted" variables in the study were controlled by the extensive study variable list. One key to limiting extraneous variables was the extensive testing the NCQA conducted to determine which variables would be incorporated into the survey instrument. Variables were only included in the final survey instrument if they passed rigid reliability and validity standards. The inclusion of health care customer satisfaction measures for health services, management of services, range of services, health status, demographics and other aspects of care into the survey instrument helped reduce the number and impact of unwanted survey variables.

To complement the more qualitative nature of the "Maxmincon Principle," quantitative steps were taken to ensure the reliability and validity of the MECE and roll-up variables. The probabilities of the *MECE variables* coded zero or one were totaled to ensure the summed probabilities equaled one. For each of the *roll-up variables*, a whole-part correlation matrix was accomplished. The results of these matrices are shown in Appendix H. After referring to named appendix, note that for all roll-up variables the actual probabilities are $p < .05$ indicating validity between the given construct and its subparts. Since reliability is a necessary for but not sufficient condition for validity, the validity established between the construct and its related questions allows one to assume reliability.

Ethical Concerns

Ethical considerations are particularly salient throughout the survey and analysis process. The NCQA protocol does not guarantee anonymity for survey respondents; however, it does instruct survey administrators to inform respondents that their answers

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are strictly confidential (NCQA 1995, 12). Four steps were taken to ensure respondent confidentiality. First, the SETON network Benefits Manager was contacted to make sure that all SETON employees had signed an information release form during their enrollment in the health benefits program. As suspected, enrollees had signed a release form allowing the SETON network to use information for quality assurance purposes. Second, respondents were informed that their answers were confidential on the first page of the survey. Third, the mail-out database containing respondent information was kept separate from all other survey files. Instead, of using the survey recipient's personal information for data tracking, a distinct survey number was assigned to each recipient. Only the primary researcher had access to the file connecting the survey recipient to the survey number. Finally, the survey administrator was not a SETON employee and had no formal affiliations with the SETON network outside its use as a training site. By following the NCQA's guidelines and building additional steps into the process to guarantee respondent confidentiality, the parameters established by NCQA have been met for this study.

Statistical Analysis Used in the Study

The statistical tests to be conducted for this study are based on the hypotheses testing for the hypotheses outline in the "Purpose" section of the paper. All statistical tests or analysis were established at the $\alpha < .05$ level, although exact probabilities are reported whenever possible.

Hypothesis One (H_a1)

- H_a1: To begin the analysis for H_a1, the descriptive statistics for the entire sample (n = 611) are given. Additionally, the statistically significant correlations between line-of-

business (LOB) and all other variables for the entire sample are highlighted. The inferential statistic of choice for H_a1 will be the Student's t-test for the mean differences between two separate group means. In this test, the means between a variety of dependent variables ($Y_{(1,2,3 \ldots n)}$), with the primary study variable of overall customer satisfaction being the most important) and the independent variable (X) of plan type (1 = HMO and 0 = PPO) will be compared.

Hypothesis Two (H_a2)

- H_a2: To analyze H_a2, the descriptive statistics for the HMO subsample ($n_{(HMO)}$ = 303) are given. Additionally, the statistically significant correlations between HMO overall customer satisfaction and all other variables for the HMO sample are highlighted. The inferential statistic of choice is full model, stepwise multiple linear regression (MLR). The dependent variable (Y) will be overall HMO customer satisfaction and the independent variables ($X_{1,2,3 \ldots n}$) will be based on the results from the HMO correlation matrix and key literature variables. From the stepwise regression, a statistically significant model should emerge that explains the shared variance among variables and has predictive capabilities.

Hypothesis Three (H_a3)

- H_a3: To analyze H_a3, the descriptive statistics for the PPO subsample ($n_{(PPO)}$ = 308) are given. Additionally, the statistically significant correlations between PPO overall customer satisfaction and all other variables for the PPO sample are highlighted. The inferential statistic of choice is full model, stepwise multiple linear regression (MLR).

The dependent variable (Y) will be overall PPO customer satisfaction and the independent variables ($X_{1,2,3...n}$) will be based on the results from the PPO correlation matrix and key literature variables. From the stepwise regression, a statistically significant model should emerge that explains the shared variance among variables and has predictive capabilities.

CHAPTER THREE

RESULTS

Based on the statistical analyses outlined above, the following results are reported

for each of the study's three hypotheses. Given the large number of variables in the study,

the descriptive statistics for the entire sample (n=611) and each subsample (HMO and

PPO) are annotated in Appendix I.

Hypothesis One Results

Based on the descriptive statistics, the entire sample (n = 611) is predominantly

female (74%), caucasian (79%), married (62%), and has at least some college or other

formal education/training after high school (89%). The population also has a fairly

substantial Hispanic membership (16%). In regards to their health status, the sample

population considers their overall health status to be "good" to "very good", although a

moderate amount report some form of tobacco (20%) use and regular exercise (49%).

Furthermore, the sample population also feels their health is about the same as it was one

year ago. Interestingly, a large portion of the population (76%) identified their enrolled

time as less than one year. The sample population is between "neither satisfied nor

dissatisfied" and "somewhat satisfied" with their health plan (4.64 on a scale from 1 to 7),

feels their health plan has "stayed about the same" over the last 12 months (2.97 on a scale

from 1 to 5) and is wavering on recommending their plan to family or friends (2.71 on a scale from 1 to 4).

TABLE 15

CORRELATIONS AMONG STUDY VARIABLES FOR H_a1: SIGNIFICANT FINDINGS BETWEEN PLAN TYPE AND OTHER STUDY VARIABLES

	plntp_0			plntp_0			plntp_0	
Variables	r	sig	Variables	r	sig	Variables	r	sig
loc2_1	0.18	**	time_7g	-0.13	**	satfin_11	0.09	*
loc2_2	0.13	**	outcm_7h	-0.10	*	perfm_12	0.25	**
loc2_4	-0.21	**	needs_7i	-0.13	**	recmd_13	0.09	*
loc2_5	-0.25	**	svsat_7k	-0.10	*	q15a_5	-0.08	*
q4_a_2	0.15	**	mdnce_7l	-0.13	**	q16_3	-0.12	**
q4_a_4	-0.16	**	stfok_7m	-0.11	**	q18_1	-0.10	*
q4_b_1	0.16	**	mdsnt_7n	-0.11	**	q18_4	0.09	*
q4_b_2	-0.15	**	stfst_7o	-0.09	**	sevl_20b	0.08	*
q7_total	-0.17	**	q8_total	0.27	**	htn_27a	-0.09	*
q7a_k	-0.18	**	adinf_8b	0.13	**	age	-0.09	*
q7l_o	-0.12	**	usein_8d	0.15	**	hspnc_32	0.13	**
aptez_7a	-0.15	**	pprtm_8e	0.13	**	q33_2	-0.15	**
apttm_7b	-0.13	**	ptprm_8f	0.37	**	q33_3	0.14	**
trmt_7c	-0.15	**	ptoop_8g	0.49	**	q33_4	0.08	*
verbl_7d	-0.11	**	q9_total	-0.14	**	q33_5	0.15	**
mdchc_7e	-0.30	**	delay_9a	-0.13	**	q35_2	0.09	*
mdez_7f	-0.23	**	dfclt_9b	-0.11	**			

Significance Levels: (*) $p < .05$, (**) $p < .01$, n = 611

Table 15 displays the statistically significant, $p < .05$, correlations that were found for plan type and all other study variables. Using these relationships as a foundation and coupling them with key literature variables, the following variables were tested and found to have the statistically significant relationships outlined in Table 16. Overall, it can be generalized that these study results support differences between the HMO and PPO LOBs in relation to various aspects of customer satisfaction identified in the health care literature.

TABLE 16

INFERENTIAL STATISTICS FOR H_a1: STUDENT'S T-TEST FOR INDEPENDENT GROUP MEAN

Variable Tested as Y	PPO n = 308 Mean	S.D.	HMO n = 303 Mean	S.D.	d.f.	t-test	p
Y (q7_total) [health care]	54.27	11.50	50.00	12.96	609	4.30	.000
Y(q8_total) [plan administration	19.92	5.42	22.23	5.27	609	-7.01	.000
Y(q9_total) [mgmt of care]	5.53	0.85	5.24	1.21	609	3.46	.001
Y(satfn_11)	4.51	1.53	4.78	1.47	609	-2.29	.022
Y(perfm_12)	2.76	0.86	3.18	0.79	609	-6.34	.000
Y(recmd_13)	2.63	0.83	2.79	0.87	609	-2.28	.023
Y(age)	43.07	10.67	41.05	11.58	609	2.24	.026
Y(hspnc_32)	0.12	0.32	0.21	0.41	609	-3.23	.001
Y(q33_2) [Caucasian]	0.85	0.35	0.73	0.44	609	3.81	.000
Y(q33_3) [Asian]	0.00	0.00	0.04	0.19	609	-3.39	.001
Y(q33_4) [Native American]	0.00	0.00	0.01	0.11	609	-2.02	.040
Y(q33_5)[Other]	0.06	0.22	0.14	0.35	609	-3.77	.000

Hypothesis Two Results

The descriptive statistics for the HMO subsample (n = 303) give nearly the same picture as the one presented for the entire sample population. However, the HMO subsample has slightly fewer females and slightly more Hispanics (71% and 21% respectively). Additionally, a much larger section of the HMO subsample reported being in their new plan less than one year (90%). Observations regarding health status and satisfaction with care mirror the entire sample with two exceptions: (1) the HMO population reports greater satisfaction for overall customer satisfaction than the total sample population (4.78 versus 4.64) and (2) they are more inclined to believe that their health plan has improved over the last 12 months when compared to the total sample (3.18 versus 2.71).

Hypothesis two postulated that HMO customer satisfaction was a function of one or more independent study variables. Table 17 displays the statistically significant, $p <$ .05, correlations for the HMO subsample overall customer satisfaction variable (satfn_11) and all other study variables. Using stepwise regression, these statistically significant relationship formed the foundation for a testable regression equation:

$H_a 2$: $Y(SATFN\_11) = a_o U + (b_1 LOC2\_1 + b_2 LOC2\_2 + b_3 LOC2\_3 + b_4 LOC2\_4) + b_5 Q7\_TOTAL + b_6 Q8\_TOTAL + b_7 Q9\_TOTAL + b_8 CMPLN\_10 + b_9 PERFM\_12 + b_{10} RECMD\_13 + b_{11} SWTCH\_14 + (b_{12} Q15A\_1 + b_{13} Q15A\_2 + b_{14} Q15A\_3 + b_{15} Q15A\_4 + b_{16} Q15A\_5 + b_{17} Q15A\_6) + (b_{18} Q16\_1 + b_{19} Q16\_2 + b_{20} Q16\_3 + b_{21} Q16\_4) + (b_{22} Q17\_2 + b_{23} Q17\_3 + b_{24} Q17\_4 + b_{25} Q17\_5 + b_{26} Q17\_6 + b_{27} Q17\_7) + (b_{28} Q18\_1 + b_{29} Q18\_2 + b_{30} Q18\_3) + b_{31} KIND\_21B + b_{32} PAIN\_23 + b_{33} BLUE\_24C + b_{34} ONEYR\_26 + b_{35} CA\_27D + b_{36} Q28\_TOTAL + b_{37} CHW29\_5D + b_{38} HSPNC\_32$

For the purpose of the stepwise regression function in SPSS 6.1 for Windows®, one of the linearly dependent variables from each MECE set in the equation was manually excluded from the stepwise regression. Additionally, given the validity of all roll-up variables established earlier in the study, totals were submitted for the individually associated variables whenever possible and appropriate to the hypothesis testing.

TABLE 17

CORRELATIONS AMONG STUDY VARIABLES FOR H_a2: SIGNIFICANT FINDINGS BETWEEN HMO OVERALL SATISFACTION AND OTHER STUDY VARIABLES

Variables	satfn_11 r	sig	Variables	satfn_11 r	sig	Variables	satfn_11 r	sig
loc2_4	0.12	*	stfst_7o	0.46	**	q16_2	0.26	**
loc2_5	0.12	*	q8_total	0.62	**	q16_5	-0.25	**
q7_total	0.65	**	range_8a	0.58	**	q17_2	0.23	**
q7a_k	0.68	**	adinf_8b	0.52	**	q17_4	-0.14	*
q7l_o	0.47	**	cstin_8c	0.41	**	q17_5	-0.19	*
aptez_7a	0.54	**	usein_8d	0.48	**	q17_7	-0.15	*
apttm_7b	0.46	**	pprtm_8e	0.37	**	q18_1	0.15	*
trmt_7c	0.53	**	ptprm_8f	0.43	**	q18_3	-0.13	*
verbl_7d	0.49	**	ptoop_8g	0.43	**	q18_4	-0.24	**
mdchc_7e	0.56	**	q9_total	0.65	**	kind_21b	-0.13	*
mdez_7f	0.53	**	delay_9a	0.55	**	pain_23	0.16	**
time_7g	0.48	**	dfclt_9b	0.61	**	blue_24c	0.19	**
outcm_7h	0.53	**	cmpln_10	-0.28	**	oneyr_26	0.14	*
needs_7i	0.59	**	perfm_12	0.48	**	ca_27d	-0.12	*
coord_7j	0.63	**	recmd_13	0.75	**	q28_totl	-0.15	**
svsat_7k	0.65	**	swtch_14	-0.66	**	back_28d	-0.16	**
mdnce_7l	0.39	**	q15a_2	0.14	*	chw29_5d	-0.21	**
stfok_7m	0.46	**	q15a_6	-0.16	**	hspnc_32	0.13	*
mdsnt_7n	0.42	**	q15a_7	-0.20	**			

Significance Levels : (*) $p < .05$, (**) $p < .01$, n = 303

Table 18 summarizes the result of the MLR for H_a2 which clearly demonstrates nine variables (willingness to recommend the plan [RECMD_13], management of care roll-up [Q9_TOTAL], health services roll-up [Q7_TOTAL], intention to switch [SWTCH_14], improvement in plan performance in one year [PERFM_12], the use of chewing tobacco [CHW29_5D], feeling blue [BLUE_24C], self-doctor reported cancer [CA_27D] and plan administration [Q8_TOTAL]) are strongly predictive of HMO overall customer satisfaction. As indicated in the table, the full model yields an R^2 of .7355, with

$F(9, 293) = 90.52$, $p < .0000$. The unique R^2 for each variable in the model is also

annotated.

TABLE 18

INFERENTIAL STATISTICS FOR H_a2:
PREDICTORS OF OVERALL HMO SATISFACTION

Effects Tested	R2 Full Model	R2 Restricted	df1	df2	F-ratio	p
recmd_13	.5607	.5607	1	301	384.22	.0000
q9_total	.6353	.0746	2	300	261.35	.0000
q7_total	.6788	.0435	3	299	210.64	.0000
swtch_14	.6953	.0165	4	298	169.99	.0000
perfm_12	.7101	.0148	5	297	145.49	.0000
chw29_5d	.7165	.0064	6	296	124.68	.0000
blue_24c	.7233	.0068	7	295	110.14	.0000
ca_27d	.7297	.0064	8	294	99.22	.0000
q8_total	.7355	.0058	9	293	90.52	.0000

H_a2: $a_oU + b_1recmd\_13 + b_2q9\_total + b_3q7\_total + b_4swtch\_14 +$
  $b_5perfm\_12 + b_6chw29\_5d + b_7blue\_24c + b_8ca\_27d + b_9q8\_total$

Hypothesis Three Results

The descriptive statistics for the PPO subsample (n = 308) give nearly the same

picture as the one presented for the entire sample population. However, the PPO

subsample has slightly more females and slightly fewer Hispanics (78% and 12%

respectively). In contrast to the sample and HMO populations, a much smaller section of

PPO subsample reported being in their new plan less than one year (61%). Observations

regarding health status and satisfaction with care mirror the entire sample with two

exceptions: (1) the PPO subsample reports lower satisfaction for overall customer

satisfaction than the total sample population (4.51 versus 4.64) and (2) the PPO

subsample is less inclined to think that their health plan has improved over the last 12

months (2.76 versus 2.97).

TABLE 19

CORRELATIONS AMONG STUDY VARIABLES
FOR H$_a$3: SIGNIFICANT FINDINGS BETWEEN PPO
OVERALL SATISFACTION AND OTHER STUDY VARIABLES

	satfn_11			satfn_11	
Variables	r	sig	Variables	r	sig
loc2_2	-0.11	*	range_8a	0.55	**
q7_total	0.35	**	adinf_8b	0.60	**
q7a_k	0.37	**	cstin_8c	0.47	**
q7l_o	0.22	**	usein_8d	0.56	**
aptez_7a	0.28	**	pprtm_8e	0.39	**
apttm_7b	0.25	**	ptprm_8f	0.55	**
trmt_7c	0.24	**	ptoop_8g	0.60	**
verbl_7d	0.22	**	q9_total	0.37	**
mdchc_7e	0.37	**	delay_9a	0.32	**
mdez_7f	0.36	**	dfclt_9b	0.30	**
time_7g	0.23	**	cmpln_10	-0.24	**
outcm_7h	0.19	**	perfm_12	0.58	**
needs_7i	0.29	**	recmd_13	0.73	**
coord_7j	0.46	**	q16_5	-0.18	**
svsat_7k	0.32	**	q17_1	0.12	*
mdnce_7l	0.21	**	sevl_20B	-0.11	*
stfok_7m	0.20	**	q34_1	-0.13	*
mdsnt_7n	0.20	**	q34_5	0.16	**
stfst_7o	0.20	**	q35_5	-0.13	*
q8_total	0.70	**			

Significance Levels: (*) $p < .05$, (**) $p < .01$, n = 308

Hypothesis three postulated PPO customer satisfaction was a function of one or

more independent study variables. Table 19 displays the statistically significant, $p < .05$,

correlations for the PPO subsample (n=308) for the overall customer satisfaction variable

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and all other study variables. Using stepwise regression, these statistically significant

relationships formed the foundation for a testable regression equation:

$$H_a3: \quad Y(SATFN\_11) = a_oU + (b_1LOC2\_1 + b_2LOC2\_2 + b_3LOC2\_3 +$$

$$b_4LOC2\_4) + b_5Q7\_TOTAL + b_6Q8\_TOTAL + b_7Q9\_TOTAL + b_8CMPLN\_10 +$$

$$b_9PERFM\_12 + b_{10}RECMD\_13 + b_{11}SWTCH\_14 + (b_{12}Q16\_1 + b_{13}Q16\_2 +$$

$$b_{14}Q16\_3 + b_{15}Q16\_4) + (b_{16}Q17\_1 + b_{17}Q17\_2 + b_{18}Q17\_3 + b_{19}Q17\_4 +$$

$$b_{20}Q17\_5 + b_{21}Q17\_6) + b_{22}SEVL\_20B + (b_{23}Q34\_1 + b_{24}Q34\_2 + b_{25}Q34\_3 +$$

$$b_{26}Q34\_4) + (b_{27}Q35\_2 + b_{28}Q35\_3 + b_{29}Q35\_4 + b_{30}Q35\_5 + b_{31}Q34\_6)$$

As done for the HMO stepwise regression, one of the linearly dependent variables of each

MECE set in the equation was manually excluded from the stepwise regression and roll-up

variables were also used whenever possible and appropriate to the hypothesis testing.

Table 20 summarizes the result of the MLR for H_a3 which indicates five variables

(willingness to recommend the plan [RECMD_13], plan administration [Q8_TOTAL],

improvement in plan performance in one year [PERFM_12], management of care

[Q9_TOTAL], and intention to switch [SWTCH_14]) are strongly predictive of PPO

TABLE 20

INFERENTIAL STATISTICS FOR H_a3:
PREDICTORS OF OVERALL PPO SATISFACTION

Effects Tested	R2 Full Model	R2 Restricted	df1	df2	F-ratio	p
recmd_13	.5341	.5341	1	306	350.85	.0000
q8_total	.6137	.0796	2	305	242.25	.0000
perfm_12	.6421	.0284	3	304	181.76	.0000
q9_total	.6490	.0069	4	303	140.03	.0000
swtch_14	.6539	.0049	5	302	114.14	.0000

H_a3: $a_oU + b_1recmd\_13 + b_2q8\_total + b_3perfm\_12 + b_4q9\_total + b_5swtch\_14$

overall customer satisfaction. As indicated in Table 20, the full model yields an $\underline{R}^2$ of

.6539, with $F(5, 302) = 114.14$, $p < .0000$. The unique R^2 for each variable in the model

is also listed.

CHAPTER FOUR

DISCUSSION

Like other research studies examining customer satisfaction, many of this study's findings support previously demonstrated relationships. However, for each of the hypotheses postulated, it is important to identify not only the similarities in findings, but to also note the differences. Lastly, it is important to describe the impact such findings have for MCOs so that substantive lessons can be learned and recommendations can be made.

Findings

Hypothesis One

Prior customer satisfaction studies have ascertained numerous relationships between the health plan option (plan type) and various customer satisfaction and demographic measures. This sample population appears remarkably similar to those populations in the customer satisfaction studies discussed earlier, with the majority of respondents being female, married consumers who generally perceive themselves to be in good health. Contrary to the literature section studies, this sample population has substantially higher education levels and has been enrolled in their current health plan for a lesser amount of time.

The results from the correlation matrix analysis and the Student's t-tests provide excellent insight into the key differences between the HMO and PPO plan options. HMO

customers are more satisfied with both overall customer satisfaction and plan administration. Furthermore, HMO customers are more likely to believe their health plan has improved over the last twelve months, and would be more willing to recommend the health plan to their family and friends if they needed care. Conversely, PPO customers are more satisfied with the plan's health care services and management of care. Demographically, HMO customers are younger than PPO members and are more likely to be non-caucasian.

Areas of Concern

1.) Over 76 percent of respondents reported being in the health plan less than one year. As discussed earlier, this may have influenced respondents' perceptions of the health plan and impacted their response evaluations.

2.) Although the finding that PPO members are more satisfied with their health care services than their HMO counterparts mirrors the findings from the RAND HIE and the MOS, the sample population as a whole consistently rated these aspects of care near the midpoint ("good") of the five-point evaluation scale. The exception to this finding was for variables that dealt with physician and staff interactions and competencies; on the whole, the sample population rated these aspects of health care services more favorably.

3.) The study also confirms the RAND HIE and the MOS findings that HMO members are more satisfied with plan administration and that PPO members are more satisfied with the management of care. However, the sample population as a whole

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consistently rated plan administration below the midpoint ("good") of its five-point

evaluation scale.

4.) The majority of customers are currently waiting between one and fourteen days for

routine care appointments, but nearly 20 percent of the sample is waiting between 15

and 30 days for routine care.

Implications for MCOs

These finding may have implications for MCOs regarding their goals, policies and

business practices. Corporate goals for key customer service variables should be

developed and monitored. Additionally, MCOs need to focus on developing business

practices that reduce the negative impact the plan's administrative policies have on its

customers. Policies and procedures that facilitate the management of care by placing the

customer at the correct point-of-care, while minimizing delays and difficulty, should be

developed. Suppliers in the health care value chain (such as SETON Human Resources

and outside contractors for administrative or health care services), should be part of the

customer satisfaction survey process and should be kept abreast of findings. Lastly,

MCOs should keep their provider network apprised of the results from customer

satisfaction surveys, particularly when the findings for physician and staff interactions and

competencies are rated favorably.

Hypothesis Two

The HMO population for this study was somewhat similar to the population of

many other studies previously discussed in the literature section. Survey respondents were

in generally very good health and well-educated. However, the sample HMO population proved to have more males and unmarried respondents than were reported in the literature studies.

The inferential analysis identified nine key predictors of overall HMO customer satisfaction accounting for nearly 74 percent of the shared variance. The regression model is represented by the following equation:

H_a2: $Y(SATFN\_11) = a_oU + b_1RECMD\_13 + b_2Q9\_TOTAL + b_3Q7\_TOTAL + b_4SWTCH\_14 + b_5PERFM\_12 + b_6CHW29\_5d + b_7BLUE\_24C + b_8CA\_27D + b_9Q8\_TOTAL$

The nine variables (willingness to recommend, overall management of care, overall health services satisfaction, intention to switch plans, improvement in plan performance, use of chew, feeling downhearted and blue, presence of cancer and overall plan administration) represent critical customer satisfaction measures for HMO overall customer satisfaction. Contrary to the findings of Ross, Steward and Sinacore (1995, 406), but supportive of Ware's studies (Davies and Ware 1991, 10), the behavioral intention questions (recommend the plan and intention to switch) were useful predictors of HMO overall satisfaction. The "recommendation" question alone accounted for 56 percent of the shared variance while the "switch" question accounted for only two percent. In general, individuals must have a comfort level with their health plan to be willing to send their family and friends to receive care. Given the consistently lower ratings HMO members gave to the health care services and management of care variables, their presence in the regression equation was somewhat anticipated. Both of these variables combined count

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for greater than 11 percent of the shared variance. Although the "plan performance" and "plan administration" variables each had one percent or less of the shared variance for the model, they are important aspects of care that can influence the HMO customer's overall satisfaction. Lastly, even though the three health status indicators account for only two percent of the shared variance in the regression model, the introduction of these variables is a testament to the value of collecting health status information.

Areas of Concern

1.) Members of the HMO population rated many of the sub-questions for satisfaction with health care services below the midpoint ("good") of the five-point evaluation scale.

2.) Members of the HMO population rated overall management of care below the sample mean.

Implications for MCOs

These nine variables represent the "critical" aspects of health care for HMO customer satisfaction. By reviewing business practices associated with these aspects of health care and allocating resources in conjunction with them, MCOs may maintain or improve their levels of customer satisfaction ratings among HMO customers. Practically speaking, this means placing emphasis on resources for member services, utilization management and network development. Additionally, the MCO may want to segment its markets based on the HMO findings. Finally, The MCO might also consider offering

disease prevention and maintenance education tailored to the HMO population's demonstrated needs (i.e., tobacco cessation courses, cancer support groups).

Hypothesis Three

This study's PPO population was very similar to the population of the RAND HIE and the MOS. Respondents were generally older, more likely to be caucasian and less healthy than other study participants. Contrary to the literature findings, the PPO sample population was better educated, which is probably due to the educational requirements associated with the health care industry.

The inferential analysis identified five key predictors of PPO overall customer satisfaction accounting for 65 percent of the shared variance. The regression model is represented by the following equation:

H_a3: $Y(SATFN\_11) = a_oU + b_1RECMD\_13 + b_2Q8\_TOTAL + b_3PERFM\_12 + b_4Q9\_TOTAL + b_5SWTCH\_14$

The five variables (willingness to recommend, overall plan administration, improvement in plan performance, overall management of care, intention to switch plans) represent critical customer satisfaction measures for PPO overall customer satisfaction. These findings also support Ware's studies (Davies and Ware 1991, 10) that behavioral intention questions (recommend the plan and intention to switch) are useful predictors of PPO overall satisfaction. For the PPO population, the "recommendation" question alone accounted for 53 percent of the shared variance. The "switch" variable had nominal effects in the PPO model. PPO members consistently rated plan administration variables lower than the sample population; therefore, its presence in the regression equation was expected. The

lack of health status indicators from the regression equation demonstrates their predictive efficiency is limited for the PPO population. This, however, does not preclude them from being used for risk-adjustment or segmenting purposes.

<u>Areas of Concern</u>

1.) Members of the PPO population rated many of the sub-questions for satisfaction with overall plan administration (question eight) below the midpoint ("good") of the five-point evaluation scale.

2.) The lack of health status indicators may mean that additional research needs to be done on the relationship between the PPO population and these variables.

<u>Implications for MCOs</u>

These five variables represent the "critical" aspects of health care for PPO customer satisfaction. Since all five of the PPO predictors are also found in the HMO predictive model, the "Implications for MCOs" outlined in the section above should simultaneously serve to maintain or improve levels of customer satisfaction ratings for PPO customers. Practically speaking, this means the steps the MCO takes to improve its customer satisfaction levels with HMO customers will also improve its PPO customer satisfaction ratings. However, MCOs will want to place a greater emphasis on all aspects of plan administration to better serve its PPO customers.

<u>Study Limitations</u>

Despite the predictive efficiencies of the two regression models in the study, caution should be exercised when generalizing the results to the population. First, the

sample population was a convenience population that was not randomly selected from all SHP enrollees. Second, the study population was a homogenous group of health care workers which may not adequately represent the population. In addition to these limitations, the sample group studied uses a self-funded health care benefit plan, which further reduces the generalization of the results. The generalization of study results should be limited to the study group and similar populations.

Suggestions for Further Research

Based on the limitations of the current study and other factors identified throughout the project, further research should be conducted to build on the findings from this baseline study. First, *continued studies* using SETON network employees should be conducted. Such studies may help eliminate the effects their limited time in the health plan might have had on evaluation response. Furthermore, the studies might also validate the use of variables eliminated from this study. Continued studies should also help identify trends in the SETON population and provide a mechanism to update and continually explain predictors of customer satisfaction. As the SHP enrollee base grows to include other lines of business (e.g., fully-insured products, worker's compensation managed care, Medicare-risk), the studies should be expanded to include these populations. Doing so should help make study results more generalizable across multiple populations. Second, the addition of a *ranking mechanism* that allow customers to rank or identify aspects of care that would most likely increase their satisfaction should also be considered for further study. This notion has been identified as critical to the use of customer satisfaction data for quality assurance and improvement programs in the health care setting by Scott and

Smith (1994, 355). Their position is that without customers' ranking the importance of various constructs for improvement opportunities, health care organizations may inadvertently waste precious resources on improving services that customers do not prefer to be improved. As such, these researchers believe that customer satisfaction or dissatisfaction with a particular construct, variable or domain does not necessarily warrant quality improvement efforts unless that issue has been identified as important to customers. Third, the addition of *smaller, site specific surveys* (e.g., GHAA's visit-specific questionnaire, AHCPR's child health, hospital and mental health surveys) should also be considered for future study. Since no one survey can capture all aspects of care across the continuum, the addition of site-specific surveys may be the optimal method for measuring customer satisfaction across multiple delivery systems and sites of care. Fourth, and finally, additional research needs to be conducted on the *cost effectiveness* of implementing a customer satisfaction survey. Research that ties improvements or degradations in customer satisfaction to an MCO's bottom-line financial performance is paramount to long-term organizational viability.

CHAPTER FIVE

RECOMMENDATIONS

While the data collection process and the outcome of the study have important

research applications, the study's main objective is to develop a series of recommendations

for the management of both the Seton Health Plan and the Military Health Service System.

Although the implications for MCOs outlined in the "Discussion" section provide broad

observations on uses for customer satisfaction survey results in managed health care, these

recommendations are specific to the future deployment of this survey and to these

organizations' ongoing efforts to continuously measure and improve their levels of

customer satisfaction.

Seton Health Plan Recommendations

*1.) The 1995 Annual Member Health Care Survey Manual, Version 1.0 is an
appropriate and valid survey instrument tool for the Seton Health Plan to use to
measure customer satisfaction.*

The implementation, hypothesis testing and results from this study validate the use

of this survey instrument (with the questions added by the SETON network) as beneficial

for the Seton Health Plan. The instrument successfully measured a battery of customer

satisfaction variables encompassing a variety of important aspects of health care services

and demographic attributes and health status indicators. The survey instrument yielded

statistically significant predictors of customer satisfaction between and within the HMO

and PPO product lines. Ultimately, while it might be fine-tuned to improve ease-of-use,

the survey is a robust and reliable means of measuring customer satisfaction for the

SETON network.

2.) *Continue to administer the survey on an annual basis using the methods and procedures outlined in this project.*

As outlined in the "Suggestions for Further Research" section of the paper,

continued studies using SETON network employees should be conducted on an *annual*

basis to monitor trends in customer satisfaction. In the "Methods and Procedures" section

of this study, it was demonstrated over 33 percent of all HMO customers and 60 percent

of all PPO customers were included in the initial mail-out. If the survey is administered

more than once per year, it will only serve to saturate the customer group and will

probably *decrease* response rates. Although the methods and procedures used in this

study deviated modestly from the NCQA's protocol, the respondent incentives included

and processes used yielded a well-above normal response rate for mail surveys (44

percent). Additionally, it is important to note that the questions added by the SETON

network for exercise (questions 29[3b and 4]) should be reworded and re-tested with

future iterations of the survey. Furthermore, the questions regarding the use of out-of-

network services and waiting times for different care levels (questions 5 and 15)

eliminated from this study should be included and tested again in the next study. As the

number of enrolled lives or lines of business grow for the Seton Health Plan, the survey

administration methods and procedures should be reviewed and altered as needed to support corporate goals and objectives.

3.) Develop a "Mini-SHP Survey" to conduct customer satisfaction "Pulse Checks"(e.g., quarterly).

Using the five predictive variables that are common to both the HMO and PPO regression models developed in this study and the 10-question disenrollment survey from the Weiss and Senf study (1986, 445), a "mini-survey" should be created that predicts both customer satisfaction and the likelihood of disenrollment. This survey could be distributed through a variety of informal and formal mechanisms (i.e., member newsletters, open enrollment periods, employer mail-outs) on a more frequent basis as a "pulse check" for ongoing customer satisfaction within the network. Once the information was received and analyzed, marketing efforts could be focused on improving customer satisfaction and preventing disenrollment.

4.) Use the results to support Seton Health Plan's purchasing decisions.

Since the survey instrument has specific questions relating to satisfaction with health care providers, the responses from these questions can be extrapolated from the survey and used to measure satisfaction with the provider network. In turn, Seton Health Plan can provide the information to physician and extender members, and work with them, via the SHP Quality Improvement Committee, to determine realistic customer satisfaction goals for the network. Once this process is in place, future decisions on provider inclusion and exclusion from the network should include customer satisfaction measurements. Additionally, the results of the customer satisfaction survey can be used to evaluate the

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performance of SHP's outsourced contractors. All members of the SHP network for the delivery of care and administrative services should be expected to meet acceptable customer satisfaction standards that are stipulated as part of the contractual arrangement. In doing so, the SHP should reap two benefits: increased levels of customer satisfaction with network providers and services and improved working relations with the network's suppliers.

5.) Use the results as part of the SHP Quality Improvement Program (QIP).

Even though the SHP's QIP is in its beginning stages, the results from this survey should be documented and additional surveys should be conducted to trend the results. Furthermore, the results should be used in the annual work plan review to improve the upcoming year's quality improvement plan. The customer satisfaction survey is one component of the SHP QIP, and is intended to work with all other surveys and studies done to improve the delivery of care and its enrollees' health status. Presently, the SHP has less than one full-time equivalent (FTE) dedicated to the program. Without the addition of one FTE (analyst) that has complete responsibility for the QIP, the SHP will have a difficult time implementing the QIP to its fullest potential, meeting the NCQA's stringent accreditation standards, and ultimately, improving their levels of customer satisfaction.

6.) Use the results for accreditation purposes.

Accreditation is rapidly becoming a discriminator for employers when they make their decisions regarding which health plan(s) to contract with for their health benefits.

Although the practice is commonly found among employers that provide health benefits for a larger number of employees, the standard is slowly ebbing into smaller employer groups, many of which have self-funded health programs. As the demand for accreditation grows both in the fully-insured and self-insured markets, SHP will need to seek accreditation from NCQA or its equivalent. When the SHP decides to pursue accreditation, evidence of ongoing customer satisfaction surveys and use of the results to improve the health plan will be an essential component for receiving accreditation. This survey provides a baseline analysis and mechanism for meeting this accreditation standard.

7.) Use the survey results for internal strategic planning and resourcing efforts.

The survey results should play an important role in SHP's ongoing strategic planning and resourcing efforts. First and foremost, the survey results should be used in developing SHP's corporate fiscal year goals and objectives for customer satisfaction. Second, and an extension of the first, SHP employees' bonuses should be tied to meeting or exceeding the established goals and objectives for customer satisfaction. The creation of concrete, achievable goals that employees may affect through daily customer interactions can have a profound and lasting impact on both the customers' and employees' satisfaction with the health plan. Lastly, the five key predictors from both the HMO and PPO regression equations clearly indicate that member services, utilization management and network development and maintenance are the departments with the greatest impact on customer satisfaction. As such, any strategic planning should reinforce and/or expand the resources and capabilities of these functions.

8.) The survey results can be used for multiple marketing purposes.

Presently, although the SHP has a general marketing strategy and target markets, the marketing plan itself is in a rudimentary stage. The results of the study should be used for the development of SHP's final marketing plan. In particular, the health status and demographics section of the survey can be used to tailor the marketing plan by the current market segments. Additionally, the study results can be used to support the product design and development functions. As an example, SHP is currently targeting self-funded employers in the Austin market. Since the SETON population, the subject of the survey, is also self-funded, population attributes and disease incidence may provide valuable information for developing the pricing structure and other marketing efforts for this particular product. Finally, as SHP develops the promotional and advertisement items for their various products, the survey results can be used to target customers and focus attention on excellence in the key areas which have been identified as critical for customers' perceptions.

9.) Distribute the survey results to customers and suppliers in Seton Health Plan's health care value chain.

The benefits of distributing the information to customers and suppliers in the value chain cannot be underestimated. *External suppliers* of services (e.g., health care facilities, physicians, outsourced contractors) for SHP customers should receive the customer satisfaction survey results so that they can use it for internal process improvement. In addition, *internal suppliers* of services (e.g., SHP departments) should also be given the information for internal process improvement. This information can be used by these

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departments to develop customized plans and programs based on population characteristics and needs. In addition to distributing the results to suppliers, the results should be communicated to SETON network employees through both informal (e.g., employee pay stubs, SETON network e-mail) and formal (e.g., SETON Heartbeat newsletter, department meetings, SETON Q & A) mechanisms. The information communicated to SETON employees should address the broad results from the survey and the steps the SHP is taking to meet and exceed their health care needs and expectations. Furthermore, the information should educate employees on processes or steps they can take to improve their own interaction with the health plan and delivery system, and how this benefits them as health care consumers. Lastly, the information passed to the employees should help them to understand how SETON leadership is addressing their concerns with their health care delivery. Once these steps have been taken, SETON Human Resources can directly measure the impact on employee morale and retention through their employee survey process.

Military Health Service System Recommendations

Like our civilian counterparts, the Military Health Service System (MHSS) needs to use the results of customer satisfaction surveys. As the MHSS makes the transition from a hospital-centered to a managed care system, customer satisfaction results will be one of the primary methods for evaluating the TRICARE support contracts. Furthermore, customer satisfaction surveys will be key mechanisms for tracking the needs and health status of our population and determining if the MHSS has effectively and efficiently met these ever-changing needs in the long term.

Many of the recommendations for the SHP can also be generally applied to the

MHSS Lead Agents if a survey process is already in place. However, one of the greatest

challenges facing the Lead Agents is a very fragmented and largely unusable customer

satisfaction survey process. Although great strides have been taken to improve the

customer satisfaction survey process within each military service, the MCS contractors

have not yet been mandated to use a common survey instrument as part of their

requirement to measure and report customer satisfaction. As such, the data eventually

received from the MCS contractors will not be standardized, making comparisons between

the regions virtually useless. The results from this project may provide meaningful

information for improving the TRICARE customer satisfaction survey process and results.

Therefore, the following recommendations are made:

1.) *Pass all the materials from this study to HQ USAF/SGR, Survey Coordinator, for consideration and use in the development of a standardized survey for regional MCS contractors.*

2.) *Work with the Survey Coordinator to determine the applicability of these findings to current Air Force and DoD efforts to standardize and improve the quality of customer satisfaction surveys.*

Despite the use of these results for Air Force or DoD purposes, the ongoing

efforts by each service and the DoD to develop and implement a standardized customer

satisfaction survey for the MCS contractors is admirable. Not only does it strengthen the

partnership between the military and civilian components of the TRICARE delivery

system, but it will also create a system for comparing results between regions and MTFs.

In the end, once the data has been collected and analyzed, the MHSS can learn from the

regions that are best meeting and exceeding customer needs, thereby improving customer satisfaction for all DoD beneficiaries.

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APPENDIX A

STUDIES CONTRIBUTING TO THE DEVELOPMENT OF CUSTOMER SATISFACTION MEASURES

Study Name	Primary Author	n =	Major Findings	Conclusions
RAND HIE	Ware, JE	7,700	1. Overall satisfaction scores were higher for the FFS group than for the HMO experimental group. 2. Access to care and quality of care variables were also rated higher in the FFS group. 3. Financial aspects and wait time in the physician office were rated more favorably by the HMO group. 4. The sick poor had lower health status than their FFS counterparts using only 13 of 26 variables.	1. HMO enrollees continue to be less satisfied with physician and access to care issues. 2. FFS plans need to work on reducing costs to their members. 3. The sick poor may have a greater risk in lowering their health status if enrolled in HMOs
Employee Health Care Value Survey	Allen, HM, Jr.	24,036	1. 86% of prepaid, 85% of IPA, 75% of POS and 73% of indemnity plan enrollees were satisfied overall. 2. Prepaid and IPA groups were more likely than there indemnity counterparts to "recommend their plan" and less likely to "switch plans in the future". 3. Plan functioning measures appeared most predictive of plan satisfaction from the employees' perspectives. 4. HMOs scored more favorably on plan functioning with more structured forms scoring best. 5. Indemnity plans scoured more favorably for physician-related measures. 6. POS plans were rated least favorably of all managed care choices in all measures. 7. Older patients were more satisfied, but sicker patients were substantially less satisfied with their plan and care.	1. Further work needs to be done to develop viable POS plans. 2. Standardized surveys provide substantial return on investment for employer groups. 3. Survey results should be incorporated into corporate quality improvement programs. 4. Survey data should be merged with other data sources (claims and medical records) for more balanced evaluations.

A-1

STUDIES CONTRIBUTING TO THE DEVELOPMENT OF CUSTOMER SATISFACTION MEASURES

Study Name	Primary Author	n =	Major Findings	Conclusions
Longitudinal Analysis of Patient Satisfaction Among Medicare Beneficiaries in Different Models of HMOs and FFS Care	Boles, M.	490 (HMO) 425 (FFS)	1. Statistically significant differences between group and staff models are only at the overall satisfaction measure level with group enrollees being more satisfied. 2. Measures of satisfaction for group and all other HMO models and FFS are different except Group model enrollees wait longer for appointments and spend less time with the physician during their appointment. 3. Education level is positively correlated with overall satisfaction at baseline, but is negated by provider satisfaction, change in health status and degree of utilization control at follow-up. 4. As health status decreases, enrollees in all HMO models satisfaction increases. 5. As utilization controls tighten, customer satisfaction increases. 6. Overall satisfaction at baseline is not predictive at follow-up.	1. Satisfaction in Medicare-risk HMO enrollees does change over time. 2. Due to Medicare population, as health status deteriorates, satisfaction increases due to increased provider contact. 3. Satisfaction increases with more stringent utilization controls because of increased plan/enrollee interaction; therefore, HMO enrollees are more satisfied than their FFS counterparts. 4. The model and resultant analysis only accounted for 4% of the variance in the study.

A-2

STUDIES CONTRIBUTING TO THE DEVELOPMENT OF CUSTOMER SATISFACTION MEASURES

Study Name	Primary Author	n =	Major Findings	Conclusions
The Role of Health Care Attributes and Demographics in the Determination of Health Care Satisfaction	Dolinsky, Al	879 (HMO) 801 (non-HMO)	1. Both HMO and non-HMO members are satisfied with their health care system and each of the measured health care attributes (see doctor when needed, quality of doctor, see specialist when needed, time between when the appointment was made and actual visit, 24 hr medical services, and out-of-pocket [OOP] costs). 2. 33% of the variance for HMO enrollees and 27% of the variance for non-HMO enrollees was accounted for in the health care attributes measured. 3. The strongest predictor of satisfaction are OOP costs. 4. The predictive effects of demographics on health care attributes is strongest for the HMO group and very limited for non-HMO members. 5. The strongest demographic predictors in the HMO group are age and marital status; but, their effect is reduced when health care attributes are included in the analysis.	1. Use demographics for segmenting the market. Their use for predictive purposes is limited for non-HMO enrollees and is adequately captured in the health care attributes measured. 2. Compete on a cost basis and network development and "brand". 3. Use the results from customer satisfaction surveys to allocate scarce resources based on their ability to impact the best predictors of satisfaction.

STUDIES CONTRIBUTING TO THE DEVELOPMENT OF CUSTOMER SATISFACTION MEASURES

Study Name	Primary Author	n =	Major Findings	Conclusions
Predictors of Satisfaction in a HMO	Fincham, JE	484	1. The demographic suggest that the average HMO enrollee is young, female, well-educated, and of moderate income. 2. HMO members indicate satisfaction via their continued membership in the plan as there was no difference in satisfaction between those that had used plan services and those that hadn't within the last year. 3. Respondents believed that the outcomes of their care were moderately good, that they were relatively disease free and that preventive measures can result in better health. 4. 22% of the variance in patient satisfaction could be accounted for using 11 independent variables (both single and multi-item scales were used). The variables having the greatest impact on the variance are physician continuity (1-item), self-assessed health status (1-item), preventive health practices (12-items) and physician-patient communication appropriateness (1-item), accounting for 21% of the variance.	1. From these findings, administrators and marketing departments should be able to develop satisfied and dissatisfied market segments. 2. Health promotion and disease prevention programs are important in HMO promotional strategies. 3. Frequent customer satisfaction assessment of the entire market and specific market segments should be an important program in all HMOs.

A-4

STUDIES CONTRIBUTING TO THE DEVELOPMENT OF CUSTOMER SATISFACTION MEASURES

Study Name	Primary Author	n =	Major Findings	Conclusions
A Causal Model of Health Status and Satisfaction with Medical Care	Hall, JA	590 (HMO enrollees at baseline) 532 (follow-up)	1. Although the study was targeted at the frailest of HMO members, health status was predictive of satisfaction with healthier patients being more satisfied.	1. The presence of disease or disability alone does not necessarily reduce satisfaction. Instead, the psychological factors associated with the disease or disability contribute to reduced satisfaction. 2. follow-up on the physician's role in influencing health status measures.
Modeling Two Dimensions of Patient Satisfaction: A Panel Study	Ho, PS	1,451 (using subset of the National Medicare Competition Evaluation	1. All four indicators in the quality of care (QOC) variable produced statistically significant correlations to the overall QOC with "physician-competency" have the greatest influence. 2. All three indicators in the access to care (ATC) variable produced statistically significant correlations to the overall ATC with "convenience of appointment" having the greatest influence. 3. In a combined model, the perception of better ATC may positively impact the perception on the QOC. The reverse relationship existed, although it was not strong and it was negative. 4. The strength of the combined model was less than that of each separate model on influencing overall satisfaction.	1. Although aggregate overall summary satisfaction measures have demonstrated reliability, the study suggests that keeping separate QOC and ATC variables is also appropriate analytically. 2. Information from both the consumers and providers of care is important for developing outcome programs.

STUDIES CONTRIBUTING TO THE DEVELOPMENT OF CUSTOMER SATISFACTION MEASURES

Study Name	Primary Author	n =	Major Findings	Conclusions
Managed Care Plan Performance Since 1980: A Literature Analysis (met-analysis)	Miller, RH	1,905	1. Enrollee satisfaction varied by the study being conducted. Of the studies reviewed, about one-half showed less satisfaction with care and provider interaction than their FFS counterparts. The other half rated their HMO as equal or better than FFS ratees. 2. Four of the studies demonstrated substantially more satisfaction with costs of the HMO versus FFS option.	1. No evidence that one HMO model produces greater customer satisfaction than any other model. 2. Additional information regarding health status and functioning needs to be combined with satisfaction results.
The customer satisfaction factor: The value of conducting employee evaluations of managed care networks.	Moses, JD	20,000 (HMO enrollees only)	1. Overall, 80% are satisfied with the quality of care they receive. The strongest determinant was performance of the primary care physician while the second was customer-service related problem resolution. 2. Convenience was the item identified that would most readily boost overall satisfaction.	1. Employer collected and analyzed data is important for ensuring employee morale and improving benefit design. 2. Information can be shared with the managed care networks to improve services.

A-6

STUDIES CONTRIBUTING TO THE DEVELOPMENT OF CUSTOMER SATISFACTION MEASURES

Study Name	Primary Author	n =	Major Findings	Conclusions
Patient Satisfaction Surveys: An Opportunity for Total Quality Improvement	Nelson, CW	18 (surveys from a variety of health care organizations)	1. Many health care organizations (HCOs) do not use patient input to design their surveys. 2. Access constructs and variables are more often measured by HMOs than other health care facilities. 3. The technical component for direct providers (physicians, nurses, technicians, etc.) is measured and used while administrative competency is measured but rarely used in analysis. 4. The interpersonal component for direct providers (physicians, nurses, technicians, etc.) is measured and used across most HCOs.	1. Patient-based assessment of outcomes and health status were virtually absent from the HCOs used for the survey. 2. Improvements in survey instrument design are needed. 3. Improvements in continuity of care measures is needed.
The Rand Health Insurance Experiment and HMOs	Wagner, EH	7,700	1. FFS members demonstrated greater satisfaction for overall satisfaction and access and quality of care indicators. 2. HMO enrollees gave higher customer satisfaction measures for "the amount of time they had to wait to see the doctor" and "financial components" of the plan.	1. Ratings from the HMO group might have been influenced by those patients that had not self-selected the HMO option. 2. Self-selected HMO and FFS groups demonstrate smaller-to-no differences in the respondents satisfaction levels.

A-7

STUDIES CONTRIBUTING TO THE DEVELOPMENT OF CUSTOMER SATISFACTION MEASURES

Study Name	Primary Author	n =	Major Findings	Conclusions
Patients' Good and Bad Surprises: How Do They Relate to Over Patient Satisfaction?	Nelson, EC	15,019	1. Good surprises are positively correlated with higher patient satisfaction while having both a good and bad surprise resulted in a negative correlation when compared to no surprise at all. 2. Eight variables (5 patient-based quality-related predictor variables and 3 patient characteristics) explained 49% of the variance in patient satisfaction. 3. The hospital-wide quality indicator (41-items) was the strongest predictor of patient satisfaction.	1. Hospitals should focus on improving their performance in "take it for granted" and expected quality attributes first. 2. Prevent bad surprises prior to creating good surprises as the negative influence of bed surprises on overall patient satisfaction is stronger. than the positive influence of good surprises.
Patient Satisfaction Survey Instrument for Use in HMOs	Weiss, BD	2,365	1. Satisfaction measures were used with others as independent variables to test for predictive capacity in determining disenrollment from an HMO. 2. Ten questions from the original questionnaire are able to predict disenrollment using a decile rating system. 3. The two most predictive questions included "intention to switch" and "happiness with coverage of the present medical plan" questions.	1. The predictive ability of the 10-item questionnaire is as strong as more lengthy surveys without a loss of specificity 2. The study is limited to populations with similar characteristics as the study was a convenience sample from University staff members.

A-8

STUDIES CONTRIBUTING TO THE DEVELOPMENT OF CUSTOMER SATISFACTION MEASURES

Study Name	Primary Author	n =	Major Findings	Conclusions
Relationships of patient satisfaction with experience of system performance and health status	Zapka, JG	3,151	1. Health status is strongly associated with plan satisfaction. The chronically ill were less likely to be dissatisfied and were those who had more thoroughly completed the survey. 2. Of the demographic predictors, older members were more satisfied; however, members with more education were less satisfied.	1. A strong relationship existed between problems with either care or delivery and dissatisfaction. 2. In general, healthier individuals were less likely to be dissatisfied with care and more likely to be satisfied with care.

APPENDIX B

PROPOSED STUDY VARIABLES

SPSS Variable Name	Variable Type	Survey Section	Major Heading	Variable Description	Survey Question Number	Operational Definitions*
satfn_11	Dependent	Satisfaction w/Care and Services	Health Plan and Services	Health Plan Satisfaction	Question #11	Coded as interval 1 - 7 on a bipolar satisfaction scale. TRANSPOSE.
plantp_0	Independent	Not applicable	Not Applicable	Plan type derived from the survey number	Not Applicable	Coded 1= Seton HMO customer, 0= Seton PPO customer. Allows for sorting by discreet groups.
p_appt_1	Independent	Screening	Enrollment	Appropriate Covered Plan	Question #1	Coded 1=Yes, 0=No.
Source: p_loc_2; MECE loc2_1 through loc2_5	Independent	Screening	Enrollment	Length of Coverage	Question #2	MECE coded 1 if the length is present, 0 otherwise. **
p_enrl_3	Independent	Added to the Screening section	Added to Enrollment	Open Enrollment	Question #3	Added to the NCQA survey; coded 1=Yes, 0=No.
p_mth_3a	Independent	Added to the Screening section	Added to Enrollment	Open Enrollment (month)	Second part of Question #3	Added to the NCQA survey, if coded 0=No from #3, then the numeric month is recorded.
Source: visit_4a; MECE q4_a_1 through q4_a_4	Independent	Screening	Health Services	Professional Visit	Question #4a	MECE coded 1 if the criteria is met, 0 otherwise.
Source: hosp_4b; MECE q4_b_1 through q4_b_4	Independent	Screening	Health Services	Hospital Stays	Question #4b	MECE coded 1 if the criteria is met, 0 otherwise.
vsOON_5a	Independent	Screening	Health Services	Professional Visit OON	Question #5a	Coded binary 1=Yes, 0=No.
hsOON_5b	Independent	Screening	Health Services	Hospital Stay OON	Question #5b	Coded binary 1=Yes, 0=No.
Source: OONwhy_6; MECE q6_1 through q6_5	Independent	Screening	Health Services	Reason for going OON	Question #6	MECE coded 1 if the criteria is met, 0 otherwise.
q7_total	Independent	Not applicable	Not applicable	Derived HealthCare (HC) Total	Not applicable	A variable derived from the total cumulative score from the responses to questions# 7 a–o.
q7_ncqa	Independent	Not applicable	Not applicable	Derived HealthCare (HC) Total from NCQA questions	Not applicable	A variable derived from the total cumulative score from the responses to questions# 7 a–k.
q7_seton	Independent	Not applicable	Not applicable	Derived HealthCare (HC) Total from Seton added questions	Not applicable	A variable derived from the total cumulative score from the responses to questions# 7 l–o.
aptez_7a	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC Appointment ease by phone	Question #7a	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
apttm_7b	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC Length of time between appt and actual visit	Question #7b	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
treat_7c	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC Thoroughness and treatment	Question #7c	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
verbl_7d	Independent	Satisfaction w/Care and Services	Health Care and Plan	Attention to what pt says	Question #7d	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
mdchc_7e	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC # Doc Choices	Question #7e	Coded as interval 1 - 5 on a bipolar poor to excellent scale.

* All items coded 99 = No response (except height and weight variables coded 999).

** MECE = Mutually Exclusive, Categorically Exhaustive.

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PROPOSED STUDY VARIABLES

SPSS Variable Name	Variable Type	Survey Section	Major Heading	Variable Description	Survey Question Number	Operational Definitions
mdez_7f	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC Ease of Physician Choice	Question #7f	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
time_7g	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC Time w/Doc and Staff	Question #7g	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
outcm_7h	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC Outcome (helped)	Question #7h	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
needs_7i	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC meets pt. needs	Question #7i	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
coord_7j	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC Coordination of Care	Question #7j	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
svsat_7k	Independent	Satisfaction w/Care and Services	Health Care and Plan	HC Overall Quality & Svcs	Questions #7k	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
mdnce_7l	Independent	*Added to Satisfaction w/Care and Services*	*Added to Health Care and Plan*	HC Courtesy of PCP	Question #7l	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
stfok_7m	Independent	*Added to Satisfaction w/Care and Services*	*Added to Health Care and Plan*	HC Courtesy of PCP Staff	Question #7m	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
mdsnt_7n	Independent	*Added to Satisfaction w/Care and Services*	*Added to Health Care and Plan*	HC Sensitivity of PCP	Question #7n	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
stfst_7o	Independent	*Added to Satisfaction w/Care and Services*	*Added to Health Care and Plan*	HC Sensitivity of PCP Staff	Question #7o	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
q8_total	Independent	Not applicable	Not applicable	Derived Plan Administration (PA) Total	Not applicable	*A variable derived from the total cumulative score from the responses to questions#8a-f.*
range_8a	Independent	Satisfaction w/Care and Services	Health Care and Plan	PA range of covered services	Question #8a	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
adinf_8b	Independent	Satisfaction w/Care and Services	Health Care and Plan	PA availability of administrative info	Question #8b	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
cstin_8c	Independent	Satisfaction w/Care and Services	Health Care and Plan	PA availability of cost info	Question #8c	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
usein_8d	Independent	Satisfaction w/Care and Services	Health Care and Plan	PA information is clear and easy to use	Question #8d	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
pprtm_8e	Independent	Satisfaction w/Care and Services	Health Care and Plan	PA Length of time for paperwork	Question #8e	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
ptprm_8f	Independent	Satisfaction w/Care and Services	Health Care and Plan	PA premium pt. pays for svcs	Question #8f	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
ptoop_8g	Independent	Satisfaction w/Care and Services	Health Care and Plan	PA OOP expenses	Questions #8g	Coded as interval 1 - 5 on a bipolar poor to excellent scale.

* *All items coded 99 = No response (except height and weight variables coded# 999).*

** *MECE = Mutually Exclusive, Categorically Exhaustive.*

PROPOSED STUDY VARIABLES

SPSS Variable Name	Variable Type	Survey Section	Major Heading	Variable Description	Survey Question Number	Operational Definitions*
q9_total	Independent	Not applicable	Not applicable	*Derived Management of Care (MC) Total*	Not applicable	*A variable derived from the total cumulative score from the responses to questions# 9 a-c.*
delay_9a	Independent	Satisfaction w/Care and Services	Health Care and Plan	MC delays in med care due to health plan	Question #9a	Coded as interval 1 - 3 on a problem scale.
dfct_9b	Independent	Satisfaction w/Care and Services	Health Care and Plan	MC difficulty in receiving med necessity care	Question #9b	Coded as interval 1 - 3 on a problem scale.
spref_9c	Independent	Satisfaction w/Care and Services	Health Care and Plan	MC pt. unable to get specialist referral	Question #9c	Coded as interval 1 - 3 on a problem scale.
cmpln_10	Independent	Satisfaction w/Care and Services	Health Care and Plan	Complaint lodged w/the Health Plan	Question #10	Coded binary 1=Yes, 0=No.
Source: rsln_10a; MECE q10_2_1 through q10_2_6	Independent	Satisfaction w/Care and Services	Health Care and Plan	If coded 1 to question #10 above, resolution time.	Second part of question #10	MECE coded 1 if criteria met, 0 otherwise.
perfm_12	Independent	Satisfaction w/Care and Services	Health Care and Plan	Plan overall performance in last 12 months	Question #12	Coded as interval 1-5 on a bipolar much better to worse scale. TRANSPOSE.
recmd_13	Independent	Satisfaction w/Care and Services	Health Care and Plan	Recommend plan to friends	Question #13	Coded as interval 1-4 on a bipolar definitely yes to definitely no scale. TRANSPOSE.
swtch_14	Independent	Satisfaction w/Care and Services	Health Care and Plan	Intention to switch	Question #14	Coded as interval 1-4 on a bipolar definitely yes to definitely no scale.
Source: wrt_15a; MECE q15a_1 through q15a_7	Independent	Satisfaction w/Care and Services	Further Info on Svcs	Wait time appt to actual date- ROUTINE	Question #15a	MECE coded 1 if criteria met, 0 otherwise.
Source: wtmn_15b; MECE q15b_1 through q15b_7	Independent	Satisfaction w/Care and Services	Further Info on Svcs	Wait time appt to actual date- MINOR ILLNESS	Question #15b	MECE coded 1 if criteria met, 0 otherwise.
Source: wtcr_15c; MECE q15b_1 through q15b_7	Independent	Satisfaction w/Care and Services	Further Info on Svcs	Wait time appt to actual date- CHRONIC	Question #15c	MECE coded 1 if criteria met, 0 otherwise.
Source: wtur_15d; MECE q15d_1 through q15d_7	Independent	Satisfaction w/Care and Services	Further Info on Svcs	Wait time appt to actual date- URGENT	Question #15d	MECE coded 1 if criteria met, 0 otherwise.
Source: mdcal_16; MECE q16_1 through q16_5	Independent	Satisfaction w/Care and Services	Further Info on Svcs	Provider Office return call time	Question #16	MECE coded 1 if criteria met, 0 otherwise.
Source: ofcwt_17; MECE q17_1 through q17_7	Independent	Satisfaction w/Care and Services	Further Info on Svcs	Wait time in provider office	Question #17	MECE coded 1 if criteria met, 0 otherwise.
Source: mdcty_18; MECE q18_1 through q18_4	Independent	Satisfaction w/Care and Services	Further Info on Svcs	Same provider frequency	Question #18	MECE coded 1 if criteria met, 0 otherwise.
gnhlt_19	Independent	Health and Daily Activities	Health and Daily Activities	General Health	Question #19	Coded interval 1 - 5 on a bipolar poor to excellent scale. TRANSPOSE.
modt_20a	Independent	Health and Daily Activities	Health and Daily Activities	Health limit day- Moderate	Question #20a	Coded as interval 1 - 3 on a limitation scale from yes, limited a lot to no, not limited at all.

* All items coded 99 = No response (except height and weight variables coded 999).

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PROPOSED STUDY VARIABLES

SPSS Variable Name	Variable Type	Survey Section	Major Heading	Variable Description	Survey Question Number	Operational Definitions*
sevl_20b	Independent	Health and Daily Activities	Health and Daily Activities	Health limit day- Active	Question #20b	Coded as interval 1 - 3 on a limitation scale from yes, limited a lot to no, not limited at all.
less_21a	Independent	Health and Daily Activities	Health and Daily Activities	Health limit 4 wks. - Accomplished less	Question #21a	Coded binary 1=Yes, 0=No
kind_21b	Independent	Health and Daily Activities	Health and Daily Activities	Health limit 4 wks. - Kind of work	Question #21b	Coded binary 1=Yes, 0=No
emtl_22a	Independent	Health and Daily Activities	Health and Daily Activities	Emotional limit 4 wks. - Accomplished less	Question #22a	Coded binary 1=Yes, 0=No
crfl_22b	Independent	Health and Daily Activities	Health and Daily Activities	Emotional limit 4 wks. - Less careful	Question #22b	Coded binary 1=Yes, 0=No
pain_23	Independent	Health and Daily Activities	Health and Daily Activities	Pain 4wks - interfere	Question #23	Coded interval 1-5 on a not at all to extremely bipolar scale. TRANSPOSE.
calm_24a	Independent	Health and Daily Activities	Health and Daily Activities	Calm & Peaceful	Question #24a	Coded interval 1-6 on a bipolar all of the time to none of the time. TRANSPOSE.
enrg_24b	Independent	Health and Daily Activities	Health and Daily Activities	High Energy	Question #24b	Coded interval 1-6 on a bipolar all of the time to none of the time. TRANSPOSE.
blue_24c	Independent	Health and Daily Activities	Health and Daily Activities	Downhearted & Blue	Question #24c	Coded interval 1-6 on a bipolar all of the time to none of the time.
socl_25	Independent	Health and Daily Activities	Health and Daily Activities	Physical and Emotional Interfere with Social	Question #25	Coded interval 1-5 on a all the time to none of the time scale.
oneyr_26	Independent	Health and Daily Activities	Health and Daily Activities	Health as Compared to One Year Ago	Question #26	Coded interval 1-5 on a bipolar much better to much worse scale. TRANSPOSE.
q27_totl	Independent	Not applicable	Not applicable	Derived Dr. Said DZ total	Not applicable	A variable derived from the total cumulative score from the responses to questions# 27 a-e.
htn_27a	Independent	Health and Daily Activities	Health and Daily Activities	Dr. said Condition - HTN	Question #27a	Coded binary 1=Yes, 0=No.
cad_27b	Independent	Health and Daily Activities	Health and Daily Activities	Dr. said Condition - Heart disease	Question #27b	Coded binary 1=Yes, 0=No.
dm_27c	Independent	Health and Daily Activities	Health and Daily Activities	Dr. said Condition - DM	Question #27c	Coded binary 1=Yes, 0=No.
ca_27d	Independent	Health and Daily Activities	Health and Daily Activities	Dr. said Condition - CA (except skin CA)	Question #27d	Coded binary 1=Yes, 0=No.
ha_27e	Independent	Health and Daily Activities	Health and Daily Activities	Dr. said Condition - Migraine HA	Question #27e	Coded binary 1=Yes, 0=No.
q28_totl	Independent	Not applicable	Not applicable	Derived Pt. Reported DZ total	Not applicable	A variable derived from the total cumulative score from the responses to questions# 28 a-l.

* All items coded 99 = No response (except height and weight variables coded 999).

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PROPOSED STUDY VARIABLES

SPSS Variable Name	Variable Type	Survey Section	Major Heading	Variable Description	Survey Question Number	Operational Definitions*
calg_28a	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Chronic Allergy/Sinus	Question #28a	Coded binary 1=Yes, 0=No.
salg_28b	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Season Allergy/ Sinus	Question #28b	Coded binary 1=Yes, 0=No.
arth_28c	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Arthritis	Question #28c	Coded binary 1=Yes, 0=No.
back_28d	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Back	Question #28d	Coded binary 1=Yes, 0=No.
eyes_28e	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Eyesight Poor	Question #28e	Coded binary 1=Yes, 0=No.
lgdz_28f	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Chronic lung	Question #28f	Coded binary 1=Yes, 0=No.
skin_28g	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Chronic skin	Question #28g	Coded binary 1=Yes, 0=No.
dprs_28h	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Depression	Question #28h	Coded binary 1=Yes, 0=No.
htbn_28i	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Ulcers/Heartburn	Question #28i	Coded binary 1=Yes, 0=No.
deaf_28j	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Deafness	Question #28j	Coded binary 1=Yes, 0=No.
roid_28k	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Hemorrhoids	Question #28k	Coded binary 1=Yes, 0=No.
limb_28l	Independent	Health and Daily Activities	Health and Daily Activities	Pt. reported condition - Extremity limits	Question #28l	Coded binary 1=Yes, 0=No.
ptw29_1	Independent	*Added to Health and Daily Activities*	*Added to Health and Daily Activities*	Pt. reported weight	Question #29_1	*Added* to the NCQA survey; continuous reported weight recorded in lbs.
ptht29_2	Independent	*Added to Health and Daily Activities*	*Added to Health and Daily Activities*	Pt. reported height w/shoes	Question #29_2	*Added* to the NCQA survey; continuous reported height recorded in inches.
exc29_3a	Independent	*Added to Health and Daily Activities*	*Added to Health and Daily Activities*	Exercise regularly	Question #29_3a	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
bst29_3b	Independent	*Added to Health and Daily Activities*	*Added to Health and Daily Activities*	Exercise at best level	Question #29_3b	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
Source: rsn29_4; MECE q29_4_1 through q29_4_7	Independent	*Added to Health and Daily Activities*	*Added to Health and Daily Activities*	Why not exercising at best level	Question #29_4	*Added* to the NCQA survey; ONLY ANSWERED if #29(3) a = NO. Coded MECE, 1 if criteria met, 0 otherwise.
cig29_5a	Independent	*Added to Health and Daily Activities*	*Added to Health and Daily Activities*	Smoke cigarettes	Question #29_5a	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.

* All items coded 99 = No response (except height and weight variables coded 999).

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PROPOSED STUDY VARIABLES

SPSS Variable Name	Variable Type	Survey Section	Major Heading	Variable Description	Survey Question Number	Operational Definitions*
pip29_5b	Independent	Added to Health and Daily Activities	Added to Health and Daily Activities	Smoke a pipe	Question #29_5b	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
cgr29_5c	Independent	Added to Health and Daily Activities	Added to Health and Daily Activities	Smoke cigars	Question #29_5c	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
chw29_5d	Independent	Added to Health and Daily Activities	Added to Health and Daily Activities	Smokeless or chewing tobacco	Question #29_5d	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
snf29_5e	Independent	Added to Health and Daily Activities	Added to Health and Daily Activities	Use snuff	Question #29_5e	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
Source: qty29_6; MECE q29_6_1 through q29_6-7	Independent	Added to Health and Daily Activities	Added to Health and Daily Activities	Frequency of tobacco use	Question #29_6	*Added* to the NCQA survey; ONLY ANSWERED if any question in #29(5) a-e = YES. Coded MECE, 1 if criteria met, 0 otherwise.
Source: dob_30; TRANSPOSED age_30	Independent	Socio-demographic	About You	Birthdate	Question #30	Transposed from mo/dt/year to age.
gendr_31	Independent	Socio-demographic	About You	Gender	Question #31	Coded binary 1=male, 0=female.
hspnc_32	Independent	Socio-demographic	About You	Hispanic	Questions #32	Coded binary 1=Yes, 0=No.
Source: race_33; MECE q33_1 through q33_5	Independent	Socio-demographic	About You	Racial/Ethnic Background	Question #33	MECE coded 1 if criteria met, 0 otherwise.
Source: marry_34; MECE q34_1 through q34_5	Independent	Socio-demographic	About You	Marital Status	Question #34	MECE coded 1 if criteria met, 0 otherwise.
Source: educ_35; MECE q35_1 through q35_6	Independent	Socio-demographic	About You	Education level	Question #35	MECE coded 1 if criteria met, 0 otherwise.
Source: tksvy_36; MECE q36_1 through q36_4	Independent	Socio-demographic	About You	Member completing form	Question #36	MECE coded 1 if criteria met, 0 otherwise.

* All items coded 99 = No response (except height and weight variables coded 999).

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APPENDIX C

SAMPLING AND DATA COLLECTION PROTOCOL FOR THE ANNUAL MEMBER HEALTH CARE SURVEY

Responsibilities

The reliability, confidentiality and comparability of all plans' data are priorities. To ensure these objectives are met, the responsibility for sampling, as well as data collection and processing lies with the research firm.

The protocols outlined herein identify the steps to be taken for sampling, data collection and processing.

Sample Universe

To have the opportunity to be sent a questionnaire, the sampling universe (population) will be comprised of the total enrolled membership. During this implementation/evaluation period of the Annual Members Health Care Survey, a 12-month time period should be selected during which enrollees were continuously enrolled allowing for multiple breaks, each up to 45 days in length.

Data File Elements

The following data file elements on the entire enrolled membership must be provided by each plan, for each product type to be evaluated, in order for the sample to be pulled by the research firm.

- **Member Identification Number:** Used as a quality control check to ensure each member is only identified once in the sample tape.
- **Member First Name:** Used for addressing cover letter and mailing piece.
- **Member Middle Initial:** Used for addressing cover letter and mailing piece.
- **Member Last Name:** Used for addressing cover letter and mailing piece.
- **Member Gender:** Used for addressing cover letter and mailing piece as well as referencing members 18 years of age or under (e.g., "your son . . . ").
- **Member Date of Birth:** Identifies member 18 years of age or under. Questionnaires are sent to subscriber/parent or guardian.
- **Member Date of Enrollment:** Used for analysis and reporting, e.g. new enrollees vs. long term members.
- **Member Street Address:** Mailing piece.
- **Member City:** Mailing piece.

- **Member State:** Mailing piece.

- **Member Zip Code:** Mailing piece.
- **Name of Plan:** Used to identify plan in cover letter and questionnaire.
- **Member Identifier (Commercial, Medicare, Medicaid):** Will be used in estimating non-deliverables and reporting.

Sampling

The research firm must assign a random number to each member in eligible population and then sort the eligible population in ascending order. The necessary sample size is selected from the top of the sort.

Assuming a 7 percent* non-deliverable rate, a sample of 825 will be pulled to achieve a return sample of 384 (assumes a probability of the characteristics at 50 percent for a 95 percent confidence interval with a margin of +/- 5 percent). Plans are allowed to draw a larger sample but must adhere to the minimum response rate of 50 percent. In addition, a separate sample should be drawn for each product to be evaluated (e.g., HMO, POS, PPO), with results reported separately.

(*Note: The non-deliverable rate should be adjusted based on the mix of plan types, e.g. high Medicaid enrollees.)

Creating the Mailing Piece

In order to ensure the highest response rate, and ultimately the most reliable data, the following procedures will be followed:

Address Standardization: To increase the deliverability of the mailing piece, each selected member's address should be processed through the U.S. Postal Service CASS Certified Zip+4 Coding Software.

First class postage: First class postage and postal bar coding should be used on all outgoing mail pieces.

Mailing Piece Content: The questionnaire will be mailed to a specific member, as opposed to "subscriber" or "occupant." Personalization of the survey should include the following:

- Member name, used in cover letter.
- Plan name in cover letter and in questionnaire where noted.

- Plan logo, used in cover letter as well as questionnaire.

- Signature from plan CEO or Medical Director, increases legitimacy of study.
- Research firm's toll-free phone number for questions/clarification. The line should be staffed 24 hours in-person or electronically.
- If available, questionnaires should be printed in the preferred language of the member. If not available, instructions should be printed on the questionnaire for the languages that represent 5 percent or greater of consumers in plan's service area. If the member's preferred language is known, this information should be used.

Cover letter: The cover letter is included in the mailing piece and should include plan logo, CEO signature, and addressed as noted above.

Envelopes: The mailing piece will include the questionnaire, with the cover letter, a windowed enveloped and an addressed, business reply envelope to the research firm.

Mailing Procedures

Data collection will be completed as follows:
1. Initial questionnaire mailing.
2. Reminder postcard mailed to all non-respondents two weeks after the first questionnaire.
3. Replacement questionnaire mailed to all non-respondents four weeks after the first mailing.
4. Data collection should be cut off two weeks after the mailing of the second survey mailing (Step #3).

In order for the data to be considered statistically precise, the following must be accomplished:
1. A minimum 50 percent response rate,
2. A total of 384 completed surveys. For plans receiving more than 384 surveys, 384 should be randomly selected using the protocols outlined in the sampling guidelines.

Replacement Surveys

Replacement surveys (lost, misplaced, language, etc.) will follow the same steps as noted above.

APPENDIX D

SAMPLE MAIL PIECES

*We serve each person as
a Christian would serve
Christ Himself.*

February 1, 1996

«Salutation» «First_Name» «Last_Name»
«STREET»
«CITY», «STATE» «Zip_Code»

Dear «Salutation» «Last_Name»,

This is one dollar of your health benefits! I'm returning it to you so that you can make a difference in the future health benefits and services offered to SETON network employees and their families. In our efforts to continuously address and improve the health benefits and services offered to our employees, the Seton Health Plan is conducting a customer satisfaction survey. The results from this survey will play an important role in shaping future benefits and services.

The survey provides a comprehensive list of questions regarding SETON network's health benefits and services. It takes approximately 15 - 20 minutes to complete. Please read the questions carefully and thoughtfully answer each question. Once you've completed the survey, please place it in the return envelope and mail the survey.

Completing the survey also provides you with the opportunity to enter our survey-related drawing. One survey respondent will receive two free months of healthcare premiums courtesy of the Seton Health Plan. So please, take the time to fill-out and send, "THE SETON TWO FREE MONTHS OF HEALTHCARE PREMIUMS POSTCARD" that's been included in your survey package.

Your feedback is important in shaping SETON's healthcare benefits and services. Please take this opportunity to make the value of the dollar below more meaningful to SETON employees and their families.

Thank you for your time and survey submission,

CHARLES J. BARNETT
President & CEO

ANNUAL MEMBER HEALTH CARE SURVEY
Adult Survey

ABOUT THIS SURVEY

This survey asks you to rate the health plan in which you are currently enrolled. Our records show that you are a member of Seton Health Plan.

The results of this survey will be used to help people like you learn more about your current health plan when evaluating what plan to choose. People in other health plans will complete the same survey. So, you and others will be able to compare your plan with other plans the next time you get to choose a plan. These results will also help purchasers, such as employers, understand how well the health plans they offer are performing and give feedback to the plans in order to improve their services.

All of your responses are strictly confidential. All of your responses will be combined with those of other members who respond to the survey.

Please return your completed survey in the enclosed stamped and addressed envelope as soon as possible.

HEALTH PLAN ENROLLMENT INFORMATION
The following items ask about the Seton Health Plan.

Please circle the number next to your answer.

1. Our records indicate that you are covered by the Seton Health Plan. Is this true?

    1. Yes
    2. No   If no, please return this survey in the envelope provided.

2. How long have you been covered by this health plan?

    1. Less than 6 months
    2. At least 6 months, but less than 1 year
    3. At least 1 year, but less than 2 years
    4. At least 2 years, but less than 5 years
    5. 5 years or more

3. Did you enroll during your company's open enrollment period? (This is the period of time in which your company allows you to select your health plan).

    1. Yes
    2. No   If no, please write the name of the month you enrolled_____

Please answer these questions for the length of time you have been covered by the Seton Health Plan. Answer questions with only the Seton Health Plan in mind.

HEALTH SERVICES

This set of questions asks about health services you have received, such as overnight hospital care or care from your physician and other health care professionals, such as a nurse practitioner, midwife, physician's assistant or registered nurse.

4. Please estimate the total number of visits you have had for the following health care services in the past 12 months.

(Circle one number on each line)

a. Visits to a doctor or other health care professional for any illness, injury, or preventive care to help you stay well	None	1 - 4	5 - 9	10+
b. Overnight hospital stays (count each entire stay as 1)	None	1 - 4	5 - 9	10+

If you answered "NONE" to __BOTH__ questions, go to Question # 7 on page 3 of the survey.

5. Were any of these services **NOT** received through the Seton Health Plan?

(Circle all that apply)

a. Visits to a doctor or other health care professional for any illness, injury, or preventive care to help you stay well	Yes	No
b. Overnight hospital stays	Yes	No

If you answered "NO" to __BOTH__ questions, go to Question # 7 on page 3 of the survey.

6. If you did not receive services through the Seton Health Plan, please tell us why.

(Circle all that apply)

Cost was less outside Seton Health Plan	1
Service or care was not available at Seton Health Plan	2
Preferred another doctor or wanted a second opinion	3
Seton Health Plan did not approve care	4
Physical problems made it difficult for you to get to the office or clinic	5

HEALTH CARE AND PLAN

Thinking about your own health care and the services you receive from the Seton Health Plan, how would you rate the following?

7.   HEALTH CARE

(Circle one number on each line)

	POOR	FAIR	GOOD	VERY GOOD	EXCELLENT
a. Ease of making appointments for medical care by phone	1	2	3	4	5
b. Length of time you wait between making an appointment for routine care and the day of your visit	1	2	3	4	5
c. Thoroughness of treatment	1	2	3	4	5
d. Attention given to what you have to say	1	2	3	4	5
e. Number of doctors you have to choose from	1	2	3	4	5
f. Ease of choosing a personal physician	1	2	3	4	5
g. Amount of time you have with doctors and staff during a visit	1	2	3	4	5
h. The outcomes of your medical care, how much you are helped	1	2	3	4	5
i. How well your care meets your needs	1	2	3	4	5
j. How well the whole system works together to coordinate your medical care, including how well different people and departments communicate with you and with each other about your care	1	2	3	4	5
k. Overall quality of care and service	1	2	3	4	5
l. Courtesy of your primary physician	1	2	3	4	5
m. Courtesy of your primary physician's **staff** members	1	2	3	4	5
n. Your primary physician's sensitivity to your needs	1	2	3	4	5
o. Your primary physician's **staffs'** sensitivity to your needs	1	2	3	4	5

8. PLAN ADMINISTRATION

(Circle one number on each line)

	POOR	FAIR	GOOD	VERY GOOD	EXCELLENT
a. Range of services covered by your plan	1	2	3	4	5
b. Availability of information from your plan about eligibility, covered services, or administrative issues	1	2	3	4	5
c. Availability of information from your doctor or plan about costs of care	1	2	3	4	5
d. Of the information received, the material is clear and easy to use	1	2	3	4	5
e. Length of time you spend filling out claim forms or other paperwork	1	2	3	4	5
f. The part of the premium YOU pay for covered services	1	2	3	4	5
g. Amount YOU pay out-of-pocket (for example: co-payments, deductibles, payments for services not covered)	1	2	3	4	5

9. MANAGEMENT OF CARE

Have any of the following been a problem for you in arranging your medical care? If so, how much of a problem?

(Circle one number on each line)

	YES, A BIG PROBLEM	YES, A SMALL PROBLEM	NO, NOT A PROBLEM
a. Delays in your medical care while you wait for approval by your health plan	1	2	3
b. Difficulty in receiving care you and your doctor believe is necessary	1	2	3
c. Not being able to get a referral to a specialist that you want to see	1	2	3

10. Have you called or written the Seton Health Plan with a complaint or problem in the last 12 months?

	(Circle one)
Yes	1
No	2 *(go to question 11)*

How long did it take for the health plan to resolve your complaint?

	(Circle one)
Same day	1
1 week	2
2 weeks	3
3 weeks	4
4 or more weeks	5
Not yet resolved	6

11. All things considered, how satisfied are you with your current health plan?

	(Circle one)
Completely satisfied, couldn't be better	1
Very satisfied	2
Somewhat satisfied	3
Neither satisfied nor dissatisfied	4
Somewhat dissatisfied	5
Very dissatisfied	6
Completely dissatisfied, couldn't be worse	7

12. During the past 12 months, did your plan's <u>overall</u> performance get better, stay the same, or get worse?

	(Circle one)
Much better	1
Somewhat better	2
Stayed the same	3
Somewhat worse	4
Much worse	5

13. Would you recommend your current health plan to your family or friends if they needed care?

	(Circle one)
Definitely yes	1
Probably yes	2
Probably not	3
Definitely not	4

14. Do you intend to switch to a different health plan when you next have an opportunity?

	(Circle one)
Definitely yes	1
Probably yes	2
Probably not	3
Definitely not	4

FURTHER INFORMATION ON SERVICES

This next set of questions asks about your health care. The term "Provider" is a general term that refers to persons from whom you receive health services.

---

15. How long do you <u>usually</u> have to wait between the time you make an appointment for care and the day you actually see the provider?

(Circle one number on each line)

When going for:	SAME DAY	1-3 DAYS	4-7 DAYS	8-14 DAYS	15-30 DAYS	31-60 DAYS	61+ DAYS
a. Routine care (like a check-up)	1	2	3	4	5	6	7
b. Minor illness or injury (like treatment for a sore throat)	1	2	3	4	5	6	7
c. Chronic or ongoing condition	1	2	3	4	5	6	7
d. Urgent Care	1	2	3	4	5	6	7

16. When calling for medical information or advice how long does it <u>usually</u> take for your provider's office to return your call?

	(Circle one)
Less than 1 hour	1
1 hour but less than 4 hours	2
4 hours but less than 7 hours	3
7 hours but less than 24 hours	4
24 hours or more	5

17. Once you get to your provider's office how long do you <u>usually</u> have to wait to see your provider when you have an appointment for care?

	(Circle one)
Less than 10 minutes	1
10 to 15 minutes	2
16 to 30 minutes	3
More than 30 minutes but less than 45 minutes	4
45 minutes to 1 hour	5
1 to 2 hours	6
2 hours or more	7

18. When you go for medical care, how often do you see the same provider?

	(Circle one)
Always	1
Most of the time	2
Sometimes	3
Rarely or never	4

HEALTH AND DAILY ACTIVITIES

This next series of questions are to help us gain a better understanding of the health of all members. Your responses are confidential and will only be viewed in combination with all other members responding to the survey.

Please answer every question. If you are unsure about how to answer, please give the best answer you can.

19. In general, would you say your health is:

	(Circle one)
Excellent	1
Very Good	2
Good	3
Fair	4
Poor	5

20. The following items are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?

(Circle one number on each line)

	YES, LIMITED A LOT	YES, LIMITED A LITTLE	NO, NOT LIMITED AT ALL
a. **Moderate activities,** such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
b. Climbing **several** flights of stairs	1	2	3

21. During the <u>past 4 weeks,</u> have you had any of the following problems with your work or other regular daily activities <u>as a result of your physical health</u>?

(Circle one number on each line)

	YES	NO
a. **Accomplished less** than you would like	1	2
b. Were limited in the **kind** of work or other activities	1	2

22. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	YES	NO
a. **Accomplished less** than you would like	1	2
b. Didn't do work or other activities as **carefully** as usual	1	2

(Circle one number on each line)

23. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

	(Circle one)
Not at all	1
A little bit	2
Moderately	3
Quite a bit	4
Extremely	5

24. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks:

(Circle one number on each line)

	ALL OF THE TIME	MOST OF THE TIME	A GOOD BIT OF THE TIME	SOME OF THE TIME	A LITTLE OF THE TIME	NONE OF THE TIME
a. Have you felt calm and peaceful	1	2	3	4	5	6
b. Did you have a lot of energy	1	2	3	4	5	6
c. Have you felt downhearted and blue	1	2	3	4	5	6

25. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

	(Circle one)
All of the time	1
Most of the time	2
Some of the time	3
A little of the time	4
None of the time	5

26. Compared to one year ago, how would you rate your health in general now?

	(Circle one)
Much better now than one year ago	1
Somewhat better now than one year ago	2
About the same as one year ago	3
Somewhat worse now than one year ago	4
Much worse now than one year ago	5

27. Has a doctor EVER told you that you had any of the following conditions?

(Circle one number on each line)

	YES	NO
a. Hypertension (sometimes called high blood pressure)	1	2
b. Heart disease (like angina or heart failure)	1	2
c. Diabetes (high blood sugar)	1	2
d. Cancer (except skin cancer)	1	2
e. Migraine (headaches)	1	2

28.   Do you __NOW__ have any of the following conditions?

	YES	NO
a. Chronic allergies or sinus troubles	1	2
b. Seasonal allergies, such as hay fever	1	2
c. Arthritis or any kind of rheumatism	1	2
d. Sciatica or chronic back problems	1	2
e. Trouble seeing with one or both eyes, even when wearing glasses, or blindness	1	2
f. Chronic lung disease (like chronic bronchitis, asthma, or emphysema)	1	2
g. Dermatitis or other chronic skin conditions	1	2
h. Depression	1	2
i. Ulcers in the stomach or duodenum, or heartburn	1	2
j. Deafness or other trouble hearing with one or both ears	1	2
k. Hemorrhoids	1	2
l. Limitation in the use of an arm or leg (missing, paralyzed, or weakness)	1	2

(Circle one number on each line)

29.   Please provide the following information about yourself (or about the survey individual, if you are completing the survey for someone else).

   1.   About how much do you weigh without shoes?   _____ lbs.

   2.   About how tall are you without shoes?   _____ feet / _____ inches

   3.   Do you currently:

(Circle one number on each line)

	YES	NO
a. Exercise regularly now? *If you answer "NO", go to Question # 29, part 4 at the TOP of the next page.*	1	2
b. In your own judgement, exercise at your own best level?	1	2

4. What, if anything, is keeping you from exercising at all, or at your best level?

	(Circle one)
No convenient place to exercise	1
No safe place to exercise	2
Not feeling up to it	3
Not enough energy	4
Pain	5
Other_____	6
Not sure/don't know	7

5. Do you currently:

	YES	NO
(Circle one number on each line)		
a. Smoke cigarettes	1	2
b. Smoke a pipe	1	2
c. Smoke cigars	1	2
d. Use smokeless tobacco or chewing tobacco	1	2
e. Use snuff	1	2

If you answered "NO" to ALL the answers in Question #29, part 5, a - e, please go to Question #30 on page 13 of the survey.

6. On the average, when you used tobacco products during the last 30 days, about how many times each day did you use the products (count **each individual** cigarette, cigar, pipe lighting, and/or dip into smokeless or chewing tobacco or snuff as **one time**)?

	(Circle one of the following)
Less than five times	1
Five to ten times	2
11 to 15 times	3
16 to 20 times	4
20 to 25 times	5
26 times or more	6
Not sure/don't know	7

ABOUT YOU

Please circle the number next to your answer.

30. What is your date of birth? (*Write the date on the line below.*)

    _____/_____/_____
      MO   DAY   YR

31. Are you male or female?

    1. Male
    2. Female

32. Are you of Hispanic or Spanish origin?

    1. Yes
    2. No

33. Which of the following best describes your racial or ethnic background?

    1. Black or African-American
    2. White or Caucasian
    3. Asian or Pacific Islander
    4. American Indian/Alaskan Native
    5. Other

34. What is your current marital status?

    1. Married
    2. Divorced
    3. Separated
    4. Widowed
    5. Never married

35. What is the highest grade or level of high school or college that you have completed?

   1. 8th Grade or less

   2. Some High School

   3. High School Graduate

   4. Some College or Other Education or Training After High School

   5. College Graduate

   6. Post-Graduate Education or Degree

36. Who completed this survey form?

   1. Member

   2. Parent/Other family member

   3. Friend of Member

   4. Other (*specify*) _____

*   *   *   *   *   *   *   *   *   *   *   *   *

Thank you very much for taking the time to complete this survey. Please mail the survey back in the enclosed stamped and addressed envelope. Additionally, don't forget to submit your "THE SETON TWO FREE MONTHS OF HEALTHCARE PREMIUMS POSTCARD" to ensure your eligibility in the drawing for two *FREE* months of health care premiums from the Seton Health Plan. If you have any questions, please call (512) 323-1929 ext. 7987.

SURVEY RETURN ENVELOPE
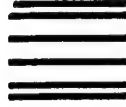
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES
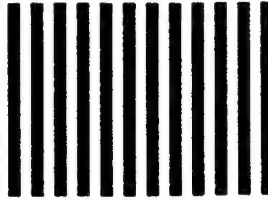
BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 4715 AUSTIN TX

POSTAGE WILL BE PAID BY ADDRESSEE

ATTN: SHP Survey Coordinator
SETON HEALTH PLAN
MAIL STOP 30
2021 GUADALUPE ST STE 100
AUSTIN TX 78705-9929

ATTN: SHP Survey Coordinator

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 4715 AUSTIN TX

POSTAGE WILL BE PAID BY ADDRESSEE

SETON HEALTH PLAN

MAIL STOP 30
2021 GUADALUPE ST STE 100
AUSTIN TX 78705-9857

"THE SETON TWO FREE MONTHS OF HEALTHCARE PREMIUMS
POSTCARD"

_____ YES! I've completed the survey and want my name submitted for the
contest!

NAME:_____

DEPARTMENT:_____

WORK PHONE:_____

HOME PHONE:_____

DRAWING TO BE HELD ON APRIL 15, 1996

ATTN: SHP Survey Coordinator
SETON HEALTH PLAN
MAIL STOP 30
2021 GUADALUPE ST STE 100
AUSTIN TX 78705-9857

THE SETON EMPLOYEE HEALTHCARE CUSTOMER SATISFACTION SURVEY

Approximately two weeks ago you received a customer satisfaction survey from the SETON network regarding your healthcare benefits and services. If you have not had the opportunity to complete the survey, please take the 15 - 20 minutes required to complete the survey. When you're finished, please mail-back the survey in the business reply return envelope included with your original survey. Additionally, make sure you send in the postcard that makes you eligible for the "THE SETON TWO FREE MONTHS OF HEALTHCARE PREMIUMS POSTCARD" drawing.

If you haven't completed the survey, please take the opportunity to do so now. Your feedback on SETON healthcare benefits and services is important. Thank you.

SETON

1201 WEST 38TH STREET

AUSTIN, TEXAS 78705-1056

(512) 323-1900

(512) 459-5629 FAX

seton@goodhealth.com

SETON MEDICAL CENTER
(512) 323-1000

BRACKENRIDGE HOSPITAL
(512) 476-6461

SETON NORTHWEST HOSPITAL
(512) 795-1000

CHILDREN'S HOSPITAL
(512) 480-1818

SETON EAST COMMUNITY
HEALTH CENTER
(512) 385-4114

SETON SOUTH COMMUNITY
HEALTH CENTER
(512) 440-1650

SETON SOUTHWEST MINOR
EMERGENCY CENTER
(512) 326-2243

SETON HOME CARE
(512) 323-1880

SETON PHYSICIAN
HOSPITAL NETWORK
(512) 323-1929

SETON FUND
(512) 323-1990

CHILDREN'S HOSPITAL
FOUNDATION OF AUSTIN
(512) 480-1243

SETON HEALTH PLAN
(512) 323-1953

«Salutation» «First_Name» «Last_Name»
«Street»
«City», «State» «Zip_Code»

Dear «Salutation» «Last_Name»,

In our efforts to continuously address and improve the health benefits and services offered to our employees, the Seton Health Plan is conducting a customer satisfaction survey for SETON network employees. The results from the survey will play an important role in shaping future benefits and services.

The survey provides a comprehensive list of questions regarding SETON network's health benefits and services. It takes approximately 15 - 20 minutes to complete. Please read the questions carefully and thoughtfully answer each question. Once you've completed the survey, please place it in the return envelope and mail the survey.

Your feedback is important in shaping SETON's healthcare benefits and services. Thank you for your time and survey submission,

Sincerely,

CHARLES J. BARNETT
President & CEO

*We serve each person as
a Christian would serve
Christ Himself.*

Daughters of Charity
HEALTH SERVICES OF AUSTIN

DAUGHTERS
OF
CHARITY
NATIONAL HEALTH SYSTEMS

APPENDIX E

DATABASE VALIDATION FEATURES

Properties

Date Created:	6/17/96 10:17:12 PM	Def. Updatable:	Yes
Last Updated:	6/17/96 10:17:45 PM	Record Count:	0

Columns

Name	Type	Size
hp_sat_11	Number (Integer)	2

Allow Zero Length:	No
Attributes:	Fixed Size
Collating Order:	Unknown or Undefined
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Decimal Places:	Auto
Description:	Question #11; coded as interval 1-7 or 99 for no response.
Format:	General Number
Ordinal Position:	37
Required:	1
Source Field:	hp_sat_11
Source Table:	Survey Sample Data
Validate On Set:	No
Validation Rule:	Between 1 And 7 Or 99
Validation Text:	Enter 1 thru 7 or 99=No Response

E-1

Survey Data Entry

Survey Number: `1002`

Question 1: `1`
Question 2: `2`
Question 3: `1`   `99`   (month)

Question 4:   a) `4`   b) `1`
Question 5:   a) `1`   b) `2`

Question 6: `2`

Question 7:   a) `5`   i) `3`
              b) `2`   j) `3`
              c) `5`   k) `3`
              d) `5`   l) `4`
              e) `1`   m) `3`
              f) `4`   n) `4`
              g) `3`   o) `3`
              h) `3`

APPENDIX F

CASE DELETION ANALYSIS

Analysis Number	Concept Tested	Resulting n=	Decision Made
Start Point	None	689	
1	Deleted cases based on respondents completing less than 75% of entire survey.	611	Retains enough cases to support the "Maxmincon" principle. ACCEPTED as method for case deletion.
2	Deleted cases based on respondents answering less than 75% complete for all subquestions for #5, #7, #9 and #15.	277	Substantially reduced the number of cases for inclusion in the study and violated the "Maxmincon" principle. REJECTED.
3	Deleted cases based on respondents answering less than 75% complete for all subquestions for #7.	593	Substantially reduced the number of cases for inclusion in the study and violated the "Maxmincon" principle. REJECTED.
4	Deleted cases based on respondents answering less than 75% complete for all subquestions for #5.	421	Substantially reduced the number of cases for inclusion in the study and violated the "Maxmincon" principle. REJECTED.
5	Deleted cases based on respondents answering less than 75% complete for all subquestions for #9.	547	Substantially reduced the number of cases for inclusion in the study and violated the "Maxmincon" principle. REJECTED.
6	Deleted cases based on respondents answering less than 75% complete for all subquestions for #15.	451	Substantially reduced the number of cases for inclusion in the study and violated the "Maxmincon" principle. REJECTED.

APPENDIX G
FINAL STUDY VARIABLES

Variable Name	Variable Description	Operational Definition
plantp_0	Plan type	Coded 1= Seton HMO customer, 0= Seton PPO customer. Allows for sorting by discreet groups.
survey_p1	Survey phase	Coded 1 = Phase 1, 2 = Phase 2 and 3 = Phase 3
p_appr_1	Member appropriately covered	Coded 1=Yes, 0=No.
loc2_1	Coverage - less than 6 months	MECE coded 1 if the criteria is met, 0 otherwise.
loc2_2	Coverage - 6 months but less than 1 year	MECE coded 1 if the criteria is met, 0 otherwise.
loc2_3	Coverage - 1 year but less than 2 years	MECE coded 1 if the criteria is met, 0 otherwise.
loc2_4	Coverage - 2 years but less than 5 years	MECE coded 1 if the criteria is met, 0 otherwise.
loc2_5	Coverage - 5 years or more	MECE coded 1 if the criteria is met, 0 otherwise.
p_enrl_3	Member enrolled during open period	*Added* to the NCQA survey; coded 1=Yes, 0=No.
q4a_1	Visits over last 12 months - None	MECE coded 1 if the criteria is met, 0 otherwise.
q4a_2	Visits over last 12 months - (1 - 4)	MECE coded 1 if the criteria is met, 0 otherwise.
q4a_3	Visits over last 12 months - (5 - 9)	MECE coded 1 if the criteria is met, 0 otherwise.
q4a_4	Visits over last 12 months - (10+)	MECE coded 1 if the criteria is met, 0 otherwise.
q4b_1	Overnight hospital stays - None	MECE coded 1 if the criteria is met, 0 otherwise.
q4b_2	Overnight hospital stays - (1 - 4)	MECE coded 1 if the criteria is met, 0 otherwise.
q4b_3	Overnight hospital stays - (5 - 9)	MECE coded 1 if the criteria is met, 0 otherwise.
q4b_4	Overnight hospital stays - (10+)	MECE coded 1 if the criteria is met, 0 otherwise.
q7_total	Question #7 summed roll-up variable	*A variable derived from the total cumulative score from the responses to questions# 7 a-o.*
q7a_k	Question #7 parts a through k	*A variable derived from the total cumulative score from the responses to questions# 7 a-k.*
q7l_o	Question #7 parts l through o	*A variable derived from the total cumulative score from the responses to questions# 7 l-o.*
aptez_7a	Ease of making medical appointments by phone	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
apttm_7b	Length of time between making appointment and actual visit	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
trmt_7c	Thoroughness of treatment	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
verbl_7d	Attention given to what you say	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
mdchc_7e	Number of doctors to choose from	Coded as interval 1 - 5 on a bipolar poor to excellent scale.

G-1

FINAL STUDY VARIABLES

Variable Name	Variable Description	Operational Definition
mdez_7f	Ease of choosing personal physician	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
time_7g	Amount of time with physician and staff during visit	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
outcm_7h	Outcomes of medical care	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
needs_7i	How well care meets needs	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
coord_7j	How well the system works to coordinate care	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
svsat_7k	Overall quality of care and services	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
mdnce_7l	Physician courtesy	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
stfok_7m	Staff courtesy	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
mdsnt_7n	Physician sensitivity	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
stfst_7o	Staff sensitivity	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
q8_total	Question #8 summed roll-up variable	*A variable derived from the total cumulative score from the responses to questions#8a-f.*
range_8a	Range of services the plan covers	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
adinf_8b	Availability of plan information on services, eligibility, etc.	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
cstin_8c	Availability from plan or physician on costs of care	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
usein_8d	Information received is clear and easy to use	*Added* to the NCQA survey; coded as interval 1 - 5 on a bipolar poor to excellent scale.
pprtm_8e	Length of time spent on claims or other paperwork	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
ptprm_8f	The part of the premium paid by the customer	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
ptoop_8g	Amount paid by the customer for other out-of-pocket costs	Coded as interval 1 - 5 on a bipolar poor to excellent scale.
q9_total	Question #9 summed roll-up variable	*A variable derived from the total cumulative score from the responses to questions# 9 a-c.*
delay_9a	Delays while waiting for health plan authorization	Coded as interval 1 - 3 on a problem scale.
dfclt_9b	Difficulty in getting care customer and physician think is needed	Coded as interval 1 - 3 on a problem scale.

G-2

FINAL STUDY VARIABLES

Variable Name	Variable Description	Operational Definition
cmpln_10	Called or written with a complaint	Coded binary 1=Yes, 0=No.
satfn_11	Overall customer satisfaction measure	Coded as interval 1 - 7 on a bipolar satisfaction scale. **TRANSPOSE.**
perfm_12	Plan's change in performance over last 12 months	Coded as interval 1-5 on a bipolar much better to worse scale. **TRANSPOSE.**
recmd_13	Willingness to recommend plan to family and friends	Coded as interval 1-4 on a bipolar definitely yes to definitely no scale. **TRANSPOSE.**
swtch_14	Intention to switch plans at the next opportunity	Coded as interval 1-4 on a bipolar definitely yes to definitely no scale.
q15a_1	Wait for routine care between call and actual appointment (same day)	MECE coded 1 if criteria met, 0 otherwise.
q15a_2	Wait for routine care between call and actual appointment (1 3 days)	MECE coded 1 if criteria met, 0 otherwise.
q15a_3	Wait for routine care between call and actual appointment (4 7 days)	MECE coded 1 if criteria met, 0 otherwise.
q15a_4	Wait for routine care between call and actual appointment (8 14 days)	MECE coded 1 if criteria met, 0 otherwise.
q15a_5	Wait for routine care between call and actual appointment (15-30 days)	MECE coded 1 if criteria met, 0 otherwise.
q15a_6	Wait for routine care between call and actual appointment (31-60 days)	MECE coded 1 if criteria met, 0 otherwise.
q15a_7	Wait for routine care between call and actual appointment (61+ days)	MECE coded 1 if criteria met, 0 otherwise.
q16_1	Time for provider to return phone call (< 1 hour)	MECE coded 1 if criteria met, 0 otherwise.
q16_2	Time for provider to return phone call (1 but < 4 hours)	MECE coded 1 if criteria met, 0 otherwise.
q16_3	Time for provider to return phone call (4 but <7 hours)	MECE coded 1 if criteria met, 0 otherwise.
q16_4	Time for provider to return phone call (7 but < 24 hours)	MECE coded 1 if criteria met, 0 otherwise.
q16_5	Time for provider to return phone call (24 hours or >)	MECE coded 1 if criteria met, 0 otherwise.
q17_1	Wait at the physician office (< 10 minutes)	MECE coded 1 if criteria met, 0 otherwise.
q17_2	Wait at the physician office (10-15 minutes)	MECE coded 1 if criteria met, 0 otherwise.
q17_3	Wait at the physician office (16-30 minutes)	MECE coded 1 if criteria met, 0 otherwise.
q17_4	Wait at the physician office (>30 but < 45 minutes)	MECE coded 1 if criteria met, 0 otherwise.

FINAL STUDY VARIABLES

Variable Name	Variable Description	Operational Definition
q17_5	Wait at the physician office (45 minutes to 1 hour)	MECE coded 1 if criteria met, 0 otherwise.
q17_6	Wait at the physician office (1 to 2 hours)	MECE coded 1 if criteria met, 0 otherwise.
q17_7	Wait at the physician office (2 hours or more)	MECE coded 1 if criteria met, 0 otherwise.
q18_1	How often do you see the same provider for care (always)	MECE coded 1 if criteria met, 0 otherwise.
q18_2	How often do you see the same provider for care (most of the time)	MECE coded 1 if criteria met, 0 otherwise.
q18_3	How often do you see the same provider for care (sometimes)	MECE coded 1 if criteria met, 0 otherwise.
q18_4	How often do you see the same provider for care (rarely or never)	MECE coded 1 if criteria met, 0 otherwise.
gnhlt_19	Perception of health	Coded interval 1 - 5 on a bipolar poor to excellent scale. TRANSPOSE.
modt_20a	Current health limits daily moderate activities	Coded as interval 1 - 3 on a limitation scale from yes, limited a lot to no, not limited at all.
sevl_20b	Current health limits daily very active activities	Coded as interval 1 - 3 on a limitation scale from yes, limited a lot to no, not limited at all.
less_21a	Accomplished less in the past 4 weeks due to health	Coded binary 1=Yes, 0=No
kind_21b	Limited in the kind of work the past 4 weeks due to health	Coded binary 1=Yes, 0=No
emtl_22a	Accomplished less in the past 4 weeks due to emotional status	Coded binary 1=Yes, 0=No
crfl_22b	Didn't work as carefully in the past 4 weeks due to emotional status	Coded binary 1=Yes, 0=No
pain_23	Pain interfering with normal work during the past 4 weeks	Coded interval 1-5 on a not at all to extremely bipolar scale. TRANSPOSE.
calm_24a	Calm and peaceful in the last 4 weeks	Coded interval 1-6 on a bipolar all of the time to none of the time. TRANSPOSE.
enrg_24b	Lots of energy in the last 4 weeks	Coded interval 1-6 on a bipolar all of the time to none of the time. TRANSPOSE.
blue_24c	Downhearted and blue in the last 4 weeks	Coded interval 1-6 on a bipolar all of the time to none of the time.

FINAL STUDY VARIABLES

Variable Name	Variable Description	Operational Definition
socl_25	Physical or emotional health interfering with social activities in past 4 weeks	Coded interval 1-5 on a all the time to none of the time scale.
oneyr_26	General health compared to one year ago	Coded interval 1-5 on a bipolar much better to much worse scale. **TRANSPOSE**.
q27_total	Question #27 summed roll-up variable (i.e., increased # is more disease states)	*A variable derived from the total cumulative score from the responses to questions#27 a-e.*
htm_27a	Customer reports physician said customer has hypertension	Coded binary 1=Yes, 0=No.
cad_27b	Customer reports physician said customer has heart disease	Coded binary 1=Yes, 0=No.
dm_27c	Customer reports physician said customer has diabetes	Coded binary 1=Yes, 0=No.
ca_27d	Customer reports physician said customer has cancer (except skin CA)	Coded binary 1=Yes, 0=No.
ha_27e	Customer reports physician said customer has migraines (headaches)	Coded binary 1=Yes, 0=No.
q28_total	Question #28 summed roll-up variable (i.e., increased # is more disease states)	*A variable derived from the total cumulative score from the responses to questions#28 a-l.*
calg_28a	Customer reports chronic allergies or sinuses	Coded binary 1=Yes, 0=No.
salg_28b	Customer reports seasonal allergies or sinuses	Coded binary 1=Yes, 0=No.
arth_28c	Customer reports arthritis or rheumatism	Coded binary 1=Yes, 0=No.
back_28d	Customer reports sciatica or chronic back problems	Coded binary 1=Yes, 0=No.
eyes_28e	Customer reports chronic eye problems	Coded binary 1=Yes, 0=No.
lgdz_28f	Customer reports chronic lung disease	Coded binary 1=Yes, 0=No.
skin_28g	Customer reports dermatitis or other skin condition	Coded binary 1=Yes, 0=No.
dprs_28h	Customer reports depression	Coded binary 1=Yes, 0=No.
htbn_28i	Customer reports ulcers or heartburn	Coded binary 1=Yes, 0=No.
deaf_28j	Customer reports deafness or hearing problems	Coded binary 1=Yes, 0=No.
roid_28k	Customer reports hemorrhoids	Coded binary 1=Yes, 0=No.
limb_28l	Customer reports limited use of limb(s)	Coded binary 1=Yes, 0=No.

FINAL STUDY VARIABLES

Variable Name	Variable Description	Operational Definition
ptwt29_1	Customer's weight (reported in pounds)	*Added* to the NCQA survey; continuous reported weight recorded in lbs.
ptht29_1	Customer's height (reported in inches)	*Added* to the NCQA survey; continuous reported height recorded in inches.
exc29_3a	Customer reports exercising regularly	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
cig29_5a	Customer reports smoking cigarettes	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
pip29_5b	Customer reports smoking pipe	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
cgr29_5c	Customer reports smoking cigars	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
chw29_5d	Customer reports use of chewing tobacco	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
snf29_5e	Customer reports use of snuff	*Added* to the NCQA survey; binary coded 1=Yes, 0=No.
age	Customer's age	Transposed from mo/dt/year to age.
gendr_31	Customer's gender	Coded binary 1=male, 0=female.
hspnc_32	Customer is of Hispanic or Spanish origin	Coded binary 1=Yes, 0=No.
q33_1	Race - Black or African-American	MECE coded 1 if criteria met, 0 otherwise.
q33_2	Race - White or Caucasian	MECE coded 1 if criteria met, 0 otherwise.
q33_3	Race - Asian or Pacific Islander	MECE coded 1 if criteria met, 0 otherwise.
q33_4	Race - American Indian/Alaskan Native	MECE coded 1 if criteria met, 0 otherwise.
q33_5	Race - Other	MECE coded 1 if criteria met, 0 otherwise.
q34_1	Marital status - married	MECE coded 1 if criteria met, 0 otherwise.
q34_2	Marital status - divorced	MECE coded 1 if criteria met, 0 otherwise.
q34_3	Marital status - separated	MECE coded 1 if criteria met, 0 otherwise.
q34_4	Marital status - widowed	MECE coded 1 if criteria met, 0 otherwise.
q34_5	Marital status - never married	MECE coded 1 if criteria met, 0 otherwise.
q35_1	Education level - 8th grade or less	MECE coded 1 if criteria met, 0 otherwise.
q35_2	Education level - some high school	MECE coded 1 if criteria met, 0 otherwise.
q35_3	Education level - high school graduate	MECE coded 1 if criteria met, 0 otherwise.
q35_4	Education level - some college or other education/training	MECE coded 1 if criteria met, 0 otherwise.
q35_5	Education level - college graduate	MECE coded 1 if criteria met, 0 otherwise.
q35_6	Education level - post-graduate education or degree	MECE coded 1 if criteria met, 0 otherwise.
q36_1	Individual completing the survey - member	MECE coded 1 if criteria met, 0 otherwise.

FINAL STUDY VARIABLES

Variable Name	Variable Description	Operational Definition
q36_2	Individual completing the survey - parent/other family member	MECE coded 1 if criteria met, 0 otherwise.
q36_3	Individual completing the survey - friend of member	MECE coded 1 if criteria met, 0 otherwise.
q36_4	Individual completing the survey - other	MECE coded 1 if criteria met, 0 otherwise.

VALIDITY STUDY: CORRELATION MATRIX FOR ALL QUESTION SEVEN SUB-QUESTIONS AND ROLL-UP VARIABLES **

Variable Name	q7_total	q7a_k	q7l_o	aptez_7a	apttm_7b	trmt_7c	verbl_7d	mdchc_7e	mdez_7f	time_7g	outcm_7h	needs_7i	coord_7j	svsat_7k	mdnce_7l	stfok_7m	mdsnt_7n	stfst_7o
q7_total	1.00																	
q7a_k	0.98	1.00																
q7l_o	0.86	0.74	1.00															
aptez_7a	0.74	0.77	0.55	1.00														
apttm_7b	0.68	0.71	0.48	0.70	1.00													
trmt_7c	0.85	0.85	0.67	0.62	0.55	1.00												
verbl_7d	0.83	0.82	0.72	0.56	0.50	0.82	1.00											
mdchc_7e	0.70	0.73	0.48	0.47	0.41	0.52	0.48	1.00										
mdez_7f	0.74	0.77	0.54	0.52	0.47	0.56	0.51	0.79	1.00									
time_7g	0.83	0.84	0.66	0.57	0.53	0.73	0.72	0.56	0.59	1.00								
outcm_7h	0.84	0.85	0.67	0.55	0.51	0.76	0.73	0.51	0.55	0.76	1.00							
needs_7i	0.85	0.87	0.65	0.58	0.50	0.75	0.71	0.56	0.59	0.73	0.85	1.00						
coord_7j	0.72	0.75	0.50	0.54	0.50	0.55	0.52	0.50	0.51	0.53	0.58	0.62	1.00					
svsat_7k	0.86	0.88	0.68	0.63	0.57	0.72	0.68	0.56	0.59	0.71	0.76	0.79	0.75	1.00				
mdnce_7l	0.78	0.67	0.91	0.47	0.39	0.63	0.68	0.43	0.48	0.60	0.62	0.59	0.42	0.61	1.00			
stfok_7m	0.77	0.66	0.92	0.50	0.46	0.57	0.60	0.44	0.48	0.55	0.56	0.56	0.46	0.61	0.74	1.00		
mdsnt_7n	0.81	0.70	0.93	0.51	0.42	0.65	0.71	0.45	0.50	0.66	0.65	0.62	0.45	0.63	0.89	0.73	1.00	
stfst_7o	0.81	0.70	0.92	0.53	0.48	0.62	0.65	0.46	0.50	0.62	0.61	0.60	0.52	0.64	0.71	0.89	0.79	1.00

** NOTE: $p < .05$ at a MINIMUM for all variables, n = 611

VALIDITY STUDY: CORRELATION MATRIX FOR ALL QUESTION EIGHT
SUB-QUESTIONS AND ROLL-UP VARIABLE **

Variable Name	q8_total	range_8a	adinf_8b	cstin_8c	usein_8d	pprtm_8e	ptprm_8f	ptoop_8g
q8_total	1.00							
range_8a	0.74	1.00						
adinf_8b	0.81	0.60	1.00					
cstin_8c	0.74	0.54	0.64	1.00				
usein_8d	0.81	0.54	0.70	0.69	1.00			
pprtm_8e	0.64	0.38	0.43	0.33	0.44	1.00		
ptprm_8f	0.76	0.42	0.49	0.40	0.46	0.41	1.00	
ptoop_8g	0.76	0.46	0.47	0.37	0.46	0.40	0.74	1.00

** NOTE: $p < .05$ at a MINIMUM for all variables, $n = 611$

H-2

**VALIDITY STUDY: CORRELATION MATRIX FOR ALL
QUESTION NINE SUB-QUESTIONS AND ROLL-UP VARIABLE ****

Variable Name	q9_total	delay_9a	dfclt_9b
q9_total	1.00		
delay_9a	0.88	1.00	
dfclt_9b	0.87	0.54	1.00

** NOTE: p < .05 at a MINIMUM for all variables, n = 611

VALIDITY STUDY: CORRELATION MATRIX FOR ALL QUESTION TWENTY-SEVEN SUB-QUESTIONS AND ROLL-UP VARIABLE

Variable Name	q27_total	htn_27a	cad_27b	dm_27c	ca_27d	ha_27e
q27_total	1.00					
htn_27a	0.71*	1.00				
cad_27b	0.33*	0.06	1.00			
dm_27c	0.47*	0.24*	0.05	1.00		
ca_27d	0.25*	-0.00	0.10*	-0.04	1.00	
ha_27e	0.59*	0.12*	0.01	-0.01	0.03	1.00

* NOTE: p < .05, n = 611

H-4

VALIDITY STUDY: CORRELATION MATRIX FOR ALL QUESTION
TWENTY-EIGHT SUB-QUESTIONS AND ROLL-UP VARIABLE

Variable Name	q28_total	calg_28a	salg_28b	arth_28c	back_28d	eyes_28e	lgdz_28f	skin_28g	dprs_28h	htbd_28i	deaf_28j	roid_28k	limb_28l
q28_total	1.00												
calg_28a	0.55*	1.00											
salg_28b	0.51*	0.25*	1.00										
arth_28c	0.49*	0.15*	0.15*	1.00									
back_28d	0.45*	0.08	0.08	0.16*	1.00								
eyes_28e	0.38*	0.11*	-0.01	0.18*	0.17*	1.00							
lgdz_28f	0.25*	0.16*	0.07	0.07	0.02	0.03	1.00						
skin_28g	0.31*	0.08	0.00	-0.00	0.08*	0.06	0.12*	1.00					
dprs_28h	0.44*	0.14*	0.08*	0.15*	0.14*	0.14*	0.03	0.15*	1.00				
htbn_28i	0.40*	0.10*	0.14*	0.12*	0.16*	0.04	0.04	0.03	0.12*	1.00			
deaf_28j	0.26*	0.08	0.04	0.05	0.07	0.06	0.06	0.09*	0.06	0.01	1.00		
roid_28k	0.29*	0.06	0.04	0.03	0.01	0.07	-0.05	0.04	-0.01	0.17*	0.05	1.00	
limb_28l	0.33*	0.05	0.04	0.23*	0.15*	0.18*	-0.06	-0.02	0.15*	0.03	0.03	-0.00	1.00

* NOTE: p < .05, n = 611

APPENDIX I

DESCRIPTIVE STATISTICS FOR HYPOTHESES ONE, TWO AND THREE

Variable Name	Variable Description	Total Sample (Ha1) n = 611		HMO Sample (Ha2) n = 303		PPO Sample (Ha3) n = 308	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
plantp_0	Plan type	0.50		1.00		0.00	
survey_p1	Survey phase	1.55	0.75	1.54	0.75	1.56	0.75
p_appr_1	Member appropriately covered	1.00		1.00		1.00	
loc2_1	Coverage - less than 6 months	0.35		0.43		0.26	
loc2_2	Coverage - 6 months but less than 1 year	0.41		0.46		0.35	
loc2_3	Coverage - 1 year but less than 2 years	0.06		0.05		0.08	
loc2_4	Coverage - 2 years but less than 5 years	0.10		0.04		0.16	
loc2_5	Coverage - 5 years or more	0.08		0.02		0.15	
p_enrl_3	Member enrolled during open period	0.86		0.83		0.88	
q4a_1	Visits over last 12 months - None	0.11		0.10		0.12	
q4a_2	Visits over last 12 months - (1 - 4)	0.66		0.73		0.59	
q4a_3	Visits over last 12 months - (5 - 9)	0.16		0.14		0.19	
q4a_4	Visits over last 12 months - (10+)	0.07		0.03		0.10	
q4b_1	Overnight hospital stays - None	0.90		0.94		0.85	
q4b_2	Overnight hospital stays - (1 - 4)	0.09		0.06		0.14	
q4b_3	Overnight hospital stays - (5 - 9)	0.01		0.00		0.01	
q4b_4	Overnight hospital stays - (10+)	0.00		0.00		0.00	
q7_total	Question #7 summed roll-up variable	52.16	12.42	50.01	12.96	54.27	11.50
q7a_k	Question #7 parts a through k	36.94	9.39	35.24	9.69	38.61	8.78
q7l_o	Question #7 parts l through o	15.22	3.73	14.77	3.97	15.66	3.44
aptez_7a	Ease of making medical appointments by phone	3.36	1.11	3.19	1.18	3.53	1.01
apttm_7b	Length of time between making appointment and actual visit	3.07	1.12	2.93	1.15	3.21	1.07
trmt_7c	Thoroughness of treatment	3.67	1.01	3.52	1.05	3.82	0.95
verbl_7d	Attention given to what you say	3.68	1.04	3.56	1.09	3.80	0.98
mdchc_7e	Number of doctors to choose from	3.15	1.18	2.79	1.17	3.49	1.09
mdez_7f	Ease of choosing personal physician	3.15	1.18	2.88	1.17	3.42	1.13
time_7g	Amount of time with physician and staff during visit	3.40	0.98	3.27	1.01	3.52	0.94
outcm_7h	Outcomes of medical care	3.56	1.00	3.46	1.03	3.66	0.95
needs_7i	How well care meets needs	3.48	1.04	3.35	1.05	3.62	1.01

Note: Those variables without the standard deviation reported are either binary coded or MECE variables.

DESCRIPTIVE STATISTICS FOR HYPOTHESES ONE, TWO AND THREE

Variable Name	Variable Description	Total Sample (Ha1) n = 611		HMO Sample (Ha2) n = 303		PPO Sample (Ha3) n = 308	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
coord_7j	How well the system works to coordinate care	2.99	1.11	2.95	1.11	3.03	1.10
svsat_7k	Overall quality of care and services	3.43	0.99	3.33	1.04	3.53	0.92
mdnce_7l	Physician courtesy	4.01	0.98	3.88	1.08	4.14	0.86
stfok_7m	Staff courtesy	3.73	1.01	3.62	1.07	3.84	0.94
mdsnt_7n	Physician sensitivity	3.85	1.03	3.73	1.11	3.97	0.94
stfst_7o	Staff sensitivity	3.63	1.04	3.54	1.07	3.72	0.99
q8_total	Question #8 summed roll-up variable	20.70	5.55	22.23	5.27	19.19	5.42
range_8a	Range of services the plan covers	2.97	0.96	3.01	0.94	2.93	0.97
adinf_8b	Availability of plan information on services, eligibility, etc.	2.85	1.01	2.98	1.01	2.72	1.00
cstin_8c	Availability from plan or physician on costs of care	2.95	1.03	3.01	1.00	2.90	1.05
usein_8d	Information received is clear and easy to use	2.90	1.00	3.05	0.96	2.75	1.01
pprtm_8e	Length of time spent on claims or other paperwork	3.43	1.05	3.57	1.03	3.29	1.06
ptprm_8f	The part of the premium paid by the customer	2.92	1.13	3.34	1.03	2.50	1.08
ptoop_8g	Amount paid by the customer for other out-of-pocket costs	2.68	1.21	3.27	1.09	2.10	1.02
q9_total	Question #9 summed roll-up variable	5.39	1.05	5.24	1.21	5.53	0.85
delay_9a	Delays while waiting for health plan authorization	2.66	0.62	2.58	0.70	2.74	0.52
dfclt_9b	Difficulty in getting care customer and physician think is needed	2.73	0.58	2.66	0.66	2.79	0.49
cmpln_10	Called or written with a complaint	0.23		0.20		0.25	
satfn_11	Overall customer satisfaction measure	4.64	1.50	4.78	1.47	4.51	1.53
perfm_12	Plan's change in performance over last 12 months	2.97	0.85	3.18	0.79	2.76	0.86
recmd_13	Willingness to recommend plan to family and friends	2.71	0.85	2.79	0.87	2.63	0.83
swtch_14	Intention to switch plans at the next opportunity	2.18	0.79	2.17	0.78	2.19	0.80
q15a_1	Wait for routine care between call and actual appointment (same day)	0.02		0.02		0.01	
q15a_2	Wait for routine care between call and actual appointment (1-3 days)	0.13		0.14		0.12	
q15a_3	Wait for routine care between call and actual appointment (4-7 days)	0.24		0.25		0.21	
q15a_4	Wait for routine care between call and actual appointment (8-14 days)	0.22		0.23		0.22	
q15a_5	Wait for routine care between call and actual appointment (15-30 days)	0.19		0.16		0.22	
q15a_6	Wait for routine care between call and actual appointment (31-60 days)	0.15		0.15		0.16	
q15a_7	Wait for routine care between call and actual appointment (61+ days)	0.05		0.05		0.06	

Note: Those variables without the standard deviation reported are either binary coded or MECE variables.

DESCRIPTIVE STATISTICS FOR HYPOTHESES ONE, TWO AND THREE

Variable Name	Variable Description	Total Sample (Ha1) n = 611 Mean	S.D.	HMO Sample (Ha2) n = 303 Mean	S.D.	PPO Sample (Ha3) n = 308 Mean	S.D.
q16_1	Time for provider to return phone call (< 1 hour)	0.11		0.11		0.12	
q16_2	Time for provider to return phone call (1 but < 4 hours)	0.48		0.50		0.45	
q16_3	Time for provider to return phone call (4 but <7 hours)	0.24		0.19		0.30	
q16_4	Time for provider to return phone call (7 but < 24 hours)	0.09		0.10		0.07	
q16_5	Time for provider to return phone call (24 hours or >)	0.08		0.10		0.06	
q17_1	Wait at the physician office (< 10 minutes)	0.07		0.08		0.07	
q17_2	Wait at the physician office (10-15 minutes)	0.35		0.37		0.32	
q17_3	Wait at the physician office (16-30 minutes)	0.38		0.35		0.40	
q17_4	Wait at the physician office (>30 but < 45 minutes)	0.12		0.11		0.14	
q17_5	Wait at the physician office (45 minutes to 1 hour)	0.06		0.06		0.06	
q17_6	Wait at the physician office (1 to 2 hours)	0.02		0.03		0.01	
q17_7	Wait at the physician office (2 hours or more)	0.00		0.00		0.00	
q18_1	How often do you see the same provider for care (always)	0.59		0.54		0.63	
q18_2	How often do you see the same provider for care (most of the time)	0.31		0.33		0.29	
q18_3	How often do you see the same provider for care (sometimes)	0.07		0.09		0.06	
q18_4	How often do you see the same provider for care (rarely or never)	0.03		0.04		0.02	
gnhlt_19	Perception of health	3.90	0.85	3.89	0.85	3.91	0.86
modt_20a	Current health limits daily moderate activities	2.84	0.46	2.86	0.41	2.81	0.51
sevl_20b	Current health limits daily very active activities	2.74	0.53	2.78	0.50	2.70	0.56
less_21a	Accomplished less in the past 4 weeks due to health	0.14		0.12		0.17	
kind_21b	Limited in the kind of work the past 4 weeks due to health	0.12		0.11		0.13	
emtl_22a	Accomplished less in the past 4 weeks due to emotional status	0.19		0.21		0.17	
crfl_22b	Didn't work as carefully in the past 4 weeks due to emotional status	0.12		0.13		0.10	
pain_23	Pain interfering with normal work during the past 4 weeks	4.40	0.92	4.43	0.88	4.37	0.95
calm_24a	Calm and peaceful in the last 4 weeks	4.12	1.15	4.15	1.14	4.10	1.16
enrg_24b	Lots of energy in the last 4 weeks	4.07	1.16	4.04	1.14	4.09	1.18
blue_24c	Downhearted and blue in the last 4 weeks	4.94	1.04	4.92	1.10	4.95	0.98
socl_25	Physical or emotional health interfering with social activities in past 4 weeks	4.41	0.93	4.43	0.90	4.39	0.95
oneyr_26	General health compared to one year ago	3.21	0.78	3.23	0.79	3.20	0.78

Note: Those variables without the standard deviation reported are either binary coded or MECE variables.

DESCRIPTIVE STATISTICS FOR HYPOTHESES ONE, TWO AND THREE

Variable Name	Variable Description	Total Sample (Ha1) n = 611 Mean	S.D.	HMO Sample (Ha2) n = 303 Mean	S.D.	PPO Sample (Ha3) n = 308 Mean	S.D.
q27_total	Question #27 summed roll-up variable (i.e., increased # is more disease states)	0.41	0.67	0.38	0.65	0.45	0.68
htn_27a	Customer reports physician said customer has hypertension	0.17		0.13		0.20	
cad_27b	Customer reports physician said customer has heart disease	0.03		0.03		0.03	
dm_27c	Customer reports physician said customer has diabetes	0.05		0.04		0.07	
ca_27d	Customer reports physician said customer has cancer (except skin CA)	0.02		0.03		0.02	
ha_27e	Customer reports physician said customer has migraines (headaches)	0.14		0.15		0.13	
q28_total	Question #28 summed roll-up variable (i.e., increased # is more disease states)	1.75	1.55	1.71	1.59	1.79	1.51
calg_28a	Customer reports chronic allergies or sinuses	0.28		0.28		0.27	
salg_28b	Customer reports seasonal allergies or sinuses	0.56		0.54		0.58	
arth_28c	Customer reports arthritis or rheumatism	0.14		0.14		0.15	
back_28d	Customer reports sciatica or chronic back problems	0.15		0.14		0.16	
eyes_28e	Customer reports chronic eye problems	0.07		0.08		0.07	
lgdz_28f	Customer reports chronic lung disease	0.05		0.06		0.04	
skin_28g	Customer reports dermatitis or other skin condition	0.10		0.10		0.09	
dprs_28h	Customer reports depression	0.10		0.11		0.10	
htbn_28i	Customer reports ulcers or heartburn	0.09		0.08		0.11	
deaf_28j	Customer reports deafness or hearing problems	0.05		0.05		0.04	
roid_28k	Customer reports hemorrhoids	0.10		0.09		0.12	
limb_28l	Customer reports limited use of limb(s)	0.07		0.06		0.08	
ptwt29_1	Customer's weight (reported in pounds)	160.88	35.66	159.65	33.87	162.09	37.36
ptht29_1	Customer's height (reported in inches)	66.02	3.62	66.07	3.81	65.98	3.43
exc29_3a	Customer reports exercising regularly	0.49		0.46		0.52	
cig29_5a	Customer reports smoking cigarettes	0.17		0.18		0.15	
pip29_5b	Customer reports smoking pipe	0.00		0.00		0.00	
cgr29_5c	Customer reports smoking cigars	0.01		0.01		0.01	
chw29_5d	Customer reports use of chewing tobacco	0.01		0.01		0.01	
snf29_5e	Customer reports use of snuff	0.01		0.01		0.01	
age	Customer's age	42.07	11.17	41.05	11.58	43.07	10.67
gendr_31	Customer's gender	0.26		0.29		0.22	

Note: Those variables without the standard deviation reported are either binary coded or MECE variables.

DESCRIPTIVE STATISTICS FOR HYPOTHESES ONE, TWO AND THREE

Variable Name	Variable Description	Total Sample (Ha1) n = 611		HMO Sample (Ha2) n = 303		PPO Sample (Ha3) n = 308	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
hspnc_32	Customer is of Hispanic or Spanish origin	0.16		0.21		0.12	
q33_1	Race - Black or African-American	0.09		0.08		0.09	
q33_2	Race - White or Caucasian	0.79		0.73		0.85	
q33_3	Race - Asian or Pacific Islander	0.01		0.04		0.00	
q33_4	Race - American Indian/Alaskan Native	0.01		0.01		0.00	
q33_5	Race - Other	0.10		0.14		0.06	
q34_1	Marital status - married	0.62		0.61		0.63	
q34_2	Marital status - divorced	0.16		0.19		0.13	
q34_3	Marital status - separated	0.03		0.02		0.03	
q34_4	Marital status - widowed	0.03		0.02		0.03	
q34_5	Marital status - never married	0.16		0.16		0.18	
q35_1	Education level - 8th grade or less	0.01		0.01		0.01	
q35_2	Education level - some high school	0.03		0.05		0.02	
q35_3	Education level - high school graduate	0.07		0.07		0.07	
q35_4	Education level - some college or other education/training	0.28		0.30		0.26	
q35_5	Education level - college graduate	0.45		0.44		0.46	
q35_6	Education level - post-graduate education or degree	0.16		0.13		0.18	
q36_1	Individual completing the survey - member	0.91		0.92		0.91	
q36_2	Individual completing the survey - parent/other family member	0.05		0.04		0.05	
q36_3	Individual completing the survey - friend of member	0.01		0.00		0.01	
q36_4	Individual completing the survey - other	0.03		0.04		0.03	

Note: Those variables without the standard deviation reported are either binary coded or MECE variables.

DESCRIPTIVE STATISTICS FOR OTHER IMPORTANT VARIABLES NOT USED IN THE ANALYSIS

Variable Name	Variable Description	Total Sample (Ha1)		HMO Sample (Ha2)		PPO Sample (Ha3)	
		n size	Mean	n size	Mean	n size	Mean
p_mth_3a_1	Month customer enrolled if NOT during the open period - January	85	0.06	47	0.06	38	0.05
p_mth_3a_2	Month customer enrolled if NOT during the open period - February	85	0.08	47	0.06	38	0.11
p_mth_3a_3	Month customer enrolled if NOT during the open period - March	85	0.04	47	0.00	38	0.08
p_mth_3a_4	Month customer enrolled if NOT during the open period - April	85	0.01	47	0.00	38	0.03
p_mth_3a_5	Month customer enrolled if NOT during the open period - May	85	0.02	47	0.02	38	0.03
p_mth_3a_6	Month customer enrolled if NOT during the open period - June	85	0.03	47	0.04	38	0.02
p_mth_3a_7	Month customer enrolled if NOT during the open period - July	85	0.05	47	0.09	38	0.00
p_mth_3a_8	Month customer enrolled if NOT during the open period - August	85	0.08	47	0.11	38	0.05
p_mth_3a_9	Month customer enrolled if NOT during the open period - September	85	0.19	47	0.28	38	0.08
p_mth_3a_10	Month customer enrolled if NOT during the open period - October	85	0.35	47	0.30	38	0.42
p_mth_3a_11	Month customer enrolled if NOT during the open period - November	85	0.04	47	0.02	38	0.05
p_mth_3a_12	Month customer enrolled if NOT during the open period - December	85	0.05	47	0.02	38	0.08
Q10_2_1	For customers registering a complaint, resolution time was "same day"	129	0.12	59	0.12	70	0.13
Q10_2_2	For customers registering a complaint, resolution time was "1 week"	129	0.18	59	0.15	70	0.20
Q10_2_3	For customers registering a complaint, resolution time was "2 weeks"	129	0.09	59	0.12	70	0.06
Q10_2_4	For customers registering a complaint, resolution time was "3 weeks"	129	0.11	59	0.14	70	0.09
Q10_2_5	For customers registering a complaint, resolution time was "4 or > weeks"	129	0.14	59	0.10	70	0.17
Q10_2_6	For customers registering a complaint, resolution time was "not yet resolved"	129	0.36	59	0.37	70	0.35
Q29_6_1	For tobacco users, use reported as "less than 5 times" in 30 days	104	0.28	56	0.27	48	0.29
Q29_6_2	For tobacco users, use reported as "5 to 10 times" in 30 days	104	0.23	56	0.29	48	0.17
Q29_6_3	For tobacco users, use reported as "11 to 15 times" in 30 days	104	0.17	56	0.14	48	0.21
Q29_6_4	For tobacco users, use reported as "16 to 20 times" in 30 days	104	0.16	56	0.12	48	0.21
Q29_6_5	For tobacco users, use reported as "20 to 25 times" in 30 days	104	0.07	56	0.11	48	0.02
Q29_6_6	For tobacco users, use reported as "26 times or more" in 30 days	104	0.07	56	0.05	48	0.08
Q29_6_7	For tobacco users, use reported as "not sure/don't know" in 30 days	104	0.02	56	0.02	48	0.02

Note: The standard deviations are not reported as these variables are MECE sets.